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JOURNAL
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RURAL DEPOPULATION[1]

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According to Greek legend, the prehistoric Athenians were at one time compelled to send a periodic tribute of youths and maidens to feed the fabulous Cretan bull known as the Minotaur. It will be remembered that Crete was full of cities while the mainland of Greece was still a land of farms and villages. It will also be remembered that the bull plays a part in Cretan somewhat similar to that of the eagle in America and the lion in British symbolism. In view of these facts, we may be excused for using this legend as symbolic of the city as the devourer of youth—the hungry monster levying its annual tribute of rural youth, always receiving, never giving, and yet never full.

Rural migration is one of the oldest of all social phenomena, yet in the last few decades it seems to be accelerated by some special factors. The purely economic factors in this present migration are so well known as to have become commonplace. They may be summarized under two main propositions. First, the demand for the great staple products of agriculture seems to have about reached the limit of its expansion except as population increases. Second, the product per worker in agriculture has enormously increased and seems likely to increase still further.

[1] Presidential address delivered at the seventeenth annual meeting of the American Farm Economics Association, held at St. Louis, December 29, 1926.

The inability to expand the demand for any of the great staple crops seems to be in part the result of the general prosperity of the people, permitting them all to consume such staple products as wheat, potatoes, beef, pork and cotton about up to their per capita capacity. Accordingly, as they increase their prosperity they do not buy any more per capita of these things but spend their surplus for a great variety of cheap luxuries, ranging all the way from automobiles to chewing gum. It is of some social significance also that the great fortunes of this generation are made by tapping the vast reservoir of spending money that is now in the pockets of the millions; but it is not the farmers or other producers of the basic necessaries of life, who make these fortunes. It is rather those who can hit the popular taste in the matter of cheap luxuries for which there seems to be an insatiable demand.

In a less fortunate age, when many were hungry and badly clothed, a little increase in general prosperity meant increased purchasing of the necessaries of life, and that meant an expansion in the market for farm products. So far as we can now look into the future, it is impossible to predict any increase in the per capita consumption of such things as wheat, corn, beef, pork or cotton, either in this country or in any of the countries that are now our best customers. Any increase in the demand for such things must wait for these countries to increase in population, or else for an extension of the markets to new populations who have not hitherto been our customers.

Some relief, of course, may be offered by the fact that as prosperity becomes more and more widely diffused, consumers will be willing to spend more and more money for quality and flavor in their foods, even though they will not be willing to spend more for bulk and nourishment. To a certain limited extent farmers may cash in on this tendency by growing the finer fruits and vegetables. Even this possibility, however, seems to be limited by two rather important facts. First, our own people seem to care less for the pleasures of the palate than for the joy of action, and are therefore more likely to spend their surplus money on automobiles and sports than for gastronomic delicacies. Second, in the supplying of the finer

fruits and vegetables our own farmers must compete with those of tropical and semi-tropical countries.

Another great fact, of almost equal importance, is that the supply of agricultural produce shows no sign of even approaching the limit of its possible expansion. This expansibility of the supply, and the lack of expansibility of the demand, means that, for some time to come, the producers of the great staple crops will work at an economic disadvantage as compared with those who cater to the rapidly expanding demand for cheap luxuries. This in no way opposes the rather obvious argument that *when* the time comes in which population increases faster than crops, agriculture will be prosperous and the fortunate owners of good agricultural land will be in a strong position. It now looks as though that time would be a long way off.

Even though the per capita demand for the staple farm crops has about reached its limit, this alone would not explain a positive decline in the rural population. If that were all, the rural population might maintain a fixed ratio to the total, but we have to consider the second of the great facts already mentioned, namely that the product per worker in agriculture has greatly increased during the last few decades. In other words, it takes a smaller and smaller proportion of the total population to provide food and clothing for the entire population. Chief among the factors in enlarging the product per farm worker is the use of power-driven machinery. If the power for doing farm work were supplied mainly by human muscles it would obviously take more human beings to grow our present crops than it now takes. By reducing the horses, mules and tractors now in use on farms to their equivalents in man power, a mathematician could readily calculate the number of additional human beings it would take to grow our crops. If, on the other hand, a statistician were able to predict the extent to which other sources of power would be used in farm operations during the next century, he might then calculate the still greater reduction in the percentage of farm workers it would take to supply the entire population with farm products. When it is remembered that the men who make all these agricultural machines and the tractors and steam engines that drive them all live in towns and not in the

country, we get a fairly vivid picture of one of the principal factors in rural depopulation.

As to the increase in product per worker in agriculture, that careful statistician and geographer, O. E. Baker, has this to say:

"American Agriculture from 1900 to 1920 more than kept pace with American manufacturing in increase of production per person employed, according to statistical evidence. This was owing not to longer hours of labor, but almost wholly to the application of scientific knowledge to agricultural production and, particularly during the war years and since, to rapid advance in machinery and equipment. But since 1919, and especially since 1921, efficiency in manufacturing has advanced at an unprecedentedly rapid rate, being more than double the rate of increase in agriculture. However, the increase in efficiency in agriculture from 1919 to 1924 was at a more rapid rate, apparently, than ever before.

The production of the ten principal crops per person engaged in agriculture increased nearly 20 per cent between 1869 and 1879, nearly 15 per cent between 1879 and 1889, and about 10 per cent from 1889 to 1899; from 1899 to date it has been possible to construct an index of agricultural production based on production of the crops not fed to livestock and on meat and milk and wool produced. The index of production of the principal crops follows very closely since 1899 this more adequate index. This fuller index compared with an index of labor employed in agriculture based on number of farmers and expenditure for labor divided by average wage, indicates an actual decrease of about 2 per cent in production per unit of labor between 1899 and 1909. But from 1909 to 1919 agricultural efficiency increased about 10 per cent; and in the 5 years between 1919 and 1924, it increased nearly 11 per cent, which is at a greater rate even than in the seventies. In the half century since 1875 the number of persons engaged in agriculture has increased by about 75 per cent, whereas agricultural production has increased by about 128 per cent, In other words, it appears that the physical volume of production per person engaged has increased by about two-thirds in the past 50 years, which indicates that the increase in efficiency in agricultural production during the five years, 1919-

24 was at about double the normal rate. These figures are tentative and may be altered somewhat after the index of agricultural production is further perfected.

In mining, production per miner, apparently, has trebled in the past 50 years, according to the index tables of Day and Persons.

But in manufacturing production per employee increased very little (6 per cent) between 1899, when the first data became available, and 1919. There was apparently an actual decrease of 4 per cent in efficiency between 1909 and 1919, a decade later than the decrease in agriculture. However, between 1919 and 1923, the last year for which data are available, there has been an amazing increase in efficiency of persons engaged in manufacturing amounting to about 27 per cent, according to studies of the census data made by Dr. Day of the University of Michigan and Mr. Thomas, of the Federal Reserve Board. The increase between 1921 and 1923 was 24 per cent.

The statistical data, therefore, confirm the common opinion that there has been an extraordinary increase since the war in production per person employed, both in agriculture and manufacturing, and consequently in the national income and welfare. However, the urban population has received a larger share of this increased income than the rural. In agriculture the use of power has increased more rapidly than production, but in manufacturing less rapidly since 1919. In manufacturing it would appear, therefore, the increased efficiency must be assigned in large part to better organization.

So far as a strictly economic analysis throws any light on the problem, there is no convincing reason to expect any reversal of the process of rural depopulation. If the product per worker engaged in agriculture should continue to increase through the use of power-driven machinery, and if the per capita consumption of farm products should fail to increase, we should be compelled to conclude that a smaller and smaller proportion of the total population would be required in agriculture. This would seem to mean that a smaller and smaller proportion of our people would live in the country, and a larger and larger proportion in the city. This conclusion, however, rests on an assumption not strictly economic in character

and somewhat startling in its implication. That assumption is that nobody is going to live in the country who is not compelled to do so by the circumstances of his occupation; or that every one who can possibly do so will live in a city. It is with this assumption that the rural economist should be principally concerned. Why must we make this assumption?

So long as we hold to this assumption, most of the proposed remedies for rural depopulation must seem to us futile. Let us take, for example, the proposal frequently made, and lately attributed to Mr. Ford, that by some reorganization of our industries the work of manufacturing and of agriculture might be done largely by the same people. Agriculture, being necessarily seasonal in its nature, could occupy a considerable proportion of the working population during the season when the growing of crops requires their attention, while at other times of the year their labors could be transferred to the indoor industries. Far from retarding the movement from country to city, this would, rather obviously, accelerate it if we continue to assume that no one will live in the country unless he is compelled to do so. If this should remain true, instead of moving our factories to the rural districts in order to utilize farm labor during the slack season, the farm laborers would much prefer to move themselves to town during that season, leaving the rural districts practically devoid of population, except when their presence is required on the farms by the growing crops. In short, the realization of this ideal of *rus in urbe* would be somewhat like the traditional combination of the lion and the lamb in which the lamb lies down inside the lion.

If we take another suggestion recently made by Sir Daniel Hall, Director of the Rothamstead Experiment Station, that American agriculture should be reorganized along capitalistic lines in order to gain the advantages of large-scale management, the same difficulty will present itself. If large-scale farming is really more efficient than medium-scale farming, it must be because it takes less man power to produce a given quantity under that system than under the present. This assumed reduction of the man power necessary to produce the food which our people will buy would tend still further to depopulate the rural districts. It would merely combine a

great many medium-sized farms into a few huge farms, and a smaller number of people in the aggregate would live in the country than now live there.

We keep coming back to the troublesome assumption that no one will live in the country whose work does not require him to do so. This is taken so much as a matter of course by many of those who are discussing the problem as to seem almost to preclude discussion. While it is a thoroughly common-place assumption, its implications are so startling when once understood as to sound positively sensational. Suppose, for example, we make the opposite assumption, namely, that no one will live in town whose work does not require him to do so, or that every one who can choose his own dwelling place without regard to the necessities of his occupation will choose the country rather than the city. If that assumption were true, it would obviously make a vast difference in our civilization. Why is not this assumption as valid as the other?

If there is something inherent in the nature of rural life that must permanently make it less attractive than urban life, the sooner we face the fact the better. If that is to be the case, we should not only cease worrying about the migration from country to city; we should positively encourage it. Every agricultural community must become, under that assumption, a sort of penal colony from which every one born there will escape as soon as he can, and to which no one will go except under the spur of necessity—that is, in order to make a living which he can't make anywhere else.

One of Guizot's best known generalizations was that the ancient civilization of Europe was characterized by the dominance of the city over the country; that the medieval civilization was characterized by the dominance of the country over the city; and that modern civilization is again reversing the process and bringing about a new domination of the city over the country. When stated in such large historical terms the proposition savors somewhat of historical fatalism, as though the result was no more to be averted than a glacial epoch or some of those great geological pulsations to which Dr. Ellsworth Huntington has ascribed so many changes in human history.

Is there nothing to do except to drift with the current? If there is any way of escape, who is the modern Theseus who will slay the Cretan bull and free the country from the domination of that urban monster?

It is idle to suppose that we could increase the number of workers on the farms without causing a still greater increase in the supply, and decrease in the price of farm crops. Something may yet be done to make the rural population more nearly self-sufficing and less dependent upon the products of manufacturing. Something else may be done to rehabilitate the country village and to transfer to it some of the functions that have been taken over by the great city. There is reason to believe that village industry did not in every case lose out to urban industry because of a marked inferiority in productive efficiency. In many cases at least the supposed superiority of huge urban industry was mainly in its sales organization. In scouting for customers the great organization has undoubted advantages over the small organization and still greater over no organization at all. The city has simply outsold the village. It is not yet certain that it can out-produce the village in every case.

Whether anything can be done toward the revival of village industries, something at least can be done towards making the village a more attractive place in which to live. If that can be done, some people whose work will permit them to live where they please may elect to live in villages rather than in cities.

Most of the rural life of our branch of the human race was really a village life. The location of the farm house on the farm is certainly not universal and it is doubtful if it can be said to be normal. In some cases at least, it seems to have been an historical accident. In this country, for example, it tended to become universal because the government under the preemption and homestead laws required it of the settler before he could get a parcel of land as a gift. Most of the idealism that has been built up around rural life has been associated with the farm village, rather than with scattered farms. It also begins to appear that the most idealistic features even of our urban lives are those which preserve some of the elements of the village.

Pomander Walk, Gramercy Park, Brattle Street, Norton's Woods and a multitude of other names suggest themselves, each one conveying the idea of what is socially and intellectually a village, even though set down in a great metropolis. What are the possibilities of the country village?

First. Schools. The greatest single thing in American life, either urban or rural, is the school. The greatest single advantage which the city has over the country is in the superiority of its schools. The greatest single thing which could be done toward making country life as attractive as city life would be to give country people as good schools as city people enjoy. A beginning, but only a beginning, has already been made in this direction in the consolidated school. This is essentially a village institution. When the consolidated school has been developed as far as it can be, one essential feature will exist for the building of an agreeable village life. I have never found a really attractive village which did not have a distinguished school as its nucleus. This should be a national as well as a state and local problem. A national program for the improvement of country schools, having as its goal the placing within the reach of every country child as good a school as is within the reach of any city child, would do more good and less harm than most programs of farm relief.

Second. Roads. One of the first things a child wants to do is to *go*. Its gocart is one of its chief means of joy. The automobile is only a glorified, self-propelling gocart. Grown-ups have not lost that primitive desire to go. No other form of amusement gives so much or such prolonged joy as motoring. Roads are as necessary as gasoline to the full enjoyment of that marvelous luxury. Give country people good roads and they can have almost as much fun as city folks. Country schools and country roads, therefore, should be built as rapidly and extensively as is physically possible. Both will encourage village life. The schools will attract, while the roads will enable villagers to go to and from their farms.

Third. Super-power. The drudgery of housework on the old-fashioned farm home was enough to drive any woman to town as soon as she could persuade her husband

to take her. The development of village life, made possible by our school and road program, would in itself relieve a great deal of that drudgery. Some of the proposals for super-power development, with transmission lines enmeshing the country in every direction, will make it physically possible and it is to be hoped economically possible, to put not only electric lights, but electric power in a majority of farm homes, especially if these homes are grouped in villages.

Fourth. Hospitals and clinics. Small hospitals and clinics, with resident nurses and visiting specialists, in these farm villages will enable farm people to obtain medical help comparable with that now available for town people. Well trained medical men might then find a career in country practice. As it is now, it is almost impossible to get a thoroughly trained physician to take up country practice. The dangers of childbirth in a lonely farmhouse, with no nursing except that furnished by kindly neighbor women, and no medical attention except that of an ill-trained country doctor, to say nothing of the dangers of bringing up a family of children under such conditions, is enough to drive any well educated woman from country to city, unless the family is absolutely compelled to live in the country in order to make a living.

Schools, roads, super-power, and hospitals are first among the things needed to make life in the country village attractive. Village libraries, operating as branches of a state library, and a number of minor attractions might be added.

When considerable numbers of people of intelligence and initiative choose to live in the country or the country village, not because their work requires it, but because they prefer to live there, it is not improbable that they will find multitudes of other ways of adding to the profit or the pleasure of country life. But so long as no one will live in the country who can possibly make a living anywhere else, the case is hopeless. It goes on from bad to worse. To prevent such a vicious circle, the federal and state governments would be justified in going to almost any length to initiate programs of school, road and hospital construction.

THE FARM PROBLEM [1]

FRANK O. LOWDEN

In the early days of agriculture, the farm was really a self-sustaining home and little more. The pioneer farmer could sell the surplus of the things he had produced, primarily for his own use, for enough at least to meet his small cash outlay. In the evolution of farming, however, since those early days, all this has changed. Commercialized farming has taken the place of pioneer farming.

There are those who regret the passing of the freedom and independence of the old days. But let them reflect that if the old methods had continued the great industrial development of our country would have been impossible. Only under a system of commercialized agriculture are the farmers of the country able to produce enough to feed and clothe the constantly increasing population of our cities and towns. As a result of commercialized agriculture, the per capita production of the American farmer has constantly increased.

In the simpler age, cost of production did not concern the farmer much. When he produced enough to feed and clothe his family, he had accomplished his main purpose. And if there was a surplus, so much the better. And the larger the surplus the wealthier the farmer was deemed. Well-filled hay mows, bursting granaries, and ample livestock in those days denoted the status of the farmer. A balance sheet was unnecessary and unknown to him.

Today we have an entirely different situation. The farmer is a business man bound by the laws which operate in other business fields. His cash expenditures are large. If he is to produce enough of food and clothing for the teeming millions in the industrial centers he, too, must employ industrial means in production. The scythe has given way to the mower, the simple plow to the gang plow, the cradle to the powerful self-binder, and the flail to the threshing machine. He must employ fertilizers if he would keep up the fertility of his soil.

[1] This paper was read at the seventeenth annual meeting of the American Farm Economic Association held at St. Louis, December 30, 1926.

The social needs of his community have required better drainage, better roads, and better schools, and all these have entailed a further burden upon him in the form of taxes. He now has a large annual cash outlay. He is a producer no longer for himself mainly, but to supply the needs of this industrial age. The surplus which he produces is now the important thing.

Cost of production therefore has become as vital a question with the farmer as with the manufacturer. It must be conceded, I think, that no one, farmer or manufacturer, can go on producing indefinitely in this commercial world at less than cost of production. It follows that some way must be found, if we are to insure future adequate supply of food and clothing, by which the producers of these prime necessities can secure at least the cost to them of producing those necessities. This is the conclusion which Professor Edward M. East, of Harvard University, reaches in his discussion of the problem. He says:

"The true financial worry of the farmer comes from having to plant his maximum acreage from six months to a year before he receives his returns, without having any idea of the price he is to receive for his labor. He not only has to plant, but he has to plant pretty much the same crops as he planted the previous year, for proper farming means specialization. He is, therefore, between the upper and the nether millstones.

"Now, I am sure I can give no concrete remedy for this problem. It is too big and involved for offhand solution. Yet it must have a solution, even though it be somewhat imperfect, if the nation is going to make the most of its resources. Solutions should be worked out by experts, and Congress forced into line to try them out. Something can certainly be done to give the farmer a return for his products that is based on the cost of production, as in any other business; and that is all he asks."

Under present conditions we have this anomaly: The farmer is not nearly so likely to suffer from a short crop as from a bumper crop. As Professors Ely and Morehouse, in *Elements of Land Economics*, recently published, say:

"A general good season may bring a bumper crop, a fact that is heralded by the metropolitan press as a sign of the

prosperity of the farmer and of the nation. As a matter of fact, a bumper crop usually brings ruinously low prices."

During the growing season, when weather conditions are most favorable, that fact is regarded as of good omen. Business responds to the promise of a bountiful crop; the railroads foresee a larger tonnage; industry anticipates an abundance of food and raw materials at reasonable prices. There is reason, therefore, for the optimism which prevails in commercial circles when there is just the right amount of heat and sunshine and rain. The farmer, too, is glad when he sees the kindly earth responding generously to his efforts to wring from its capricious bosom sustenance for man and beast. His gladness, however, is tempered with the bitter thought that maybe these seeming blessings of a kindly Providence may bring him ruin. He is always confronted with this dilemma; if he produce too little, men and women and children will go hungry and naked; if he produce too much, the surplus for the time may break the price he receives for his product to a point where it would have been better for him if he had let his fields lie fallow throughout the year. Those who tire of the farmer's complaint say that he must adjust his production to the probable demand just as industry does. While no doubt progress can be made through farmer organizations to better coordinate supply with demand, the farmer cannot avoid the occasional surplus.

The fact is, the farmer must always plan to raise more than just enough if the world is to be fed and clothed. Everyone recognizes this need. That is why a reasonable carryover from season to season is regarded by the commercial world as necessary if we are to have a feeling of security for the coming year.

A surplus, therefore, of the staple products of the farm is inevitable and necessary. The nation that holds this surplus is the richer for having it. Industry can plan the better for the future if it knows in advance that we shall have enough of food and raw materials. The farmer asks why, if this occasional surplus is a good thing for everyone else it should result in a loss to him?

If there were not surpluses some years, there would be a deficiency in others, and the world would be lacking in suffi-

cient food and clothes. If, however, the farmer alone must bear the crushing burden of a surplus, under the slow operation of economic laws, the time will come when there will be no surplus, and when therefore the world will go hungry and but half clothed. In the interest therefore of society as well as of the farmer, we must contrive some method by which the surpluses of the very essentials of life shall become a benefit to him who produces them and not a burden.

The problem is how to attain this object. It is clear that the individual farmer cannot do this. If the producers of any farm commodity were completely organized, it is conceivable that they might accomplish this very end.

Organization of the farmers for the purpose of marketing their crops collectively is progressing. I believe that some day it will cover the entire field. Denmark has shown how, under the most adverse circumstances, it can transform the agriculture of a people. Wherever cooperative marketing is farthest advanced, either in the United States or abroad, there you find agriculture in its best estate; violent fluctuations in the markets eliminated; better prices to the producers without an increase in cost and sometimes with an actual decrease to the consumer; an approach to standardization of product; a more intelligent effort to adjust production to probable demand; a finer and more satisfying community life.

It is doubtful, however, if the cooperatives are ever sufficiently organized to take care of this ever-present problem of surplus unless some way be found by which the cost of handling the surplus is borne equally by all producers of the particular commodity.

If the producers of any farm product are only partly organized and attempt to take care of the surplus, the producers of that commodity who are not members of the cooperative receive the full benefit of the improved price without bearing any of the burdens incident to the surplus.

To illustrate: the tobacco cooperatives were very successful for a number of years. When farm prices broke in 1920, the tobacco growers were among the severest sufferers. Tobacco was selling far below cost of production. And then cooperative marketing associations were formed.

Through their largely increased bargaining power these associations were able to sell the bulk of their crop at remunerative prices. To accomplish this, it was necessary to withhold a surplus temporarily from the market. That entailed a necessary expense. The non-member, therefore, was able to avail himself of the better prices which the association had established without bearing any part of the burden of handling the surplus. And thus, though the members of the cooperatives themselves received much larger returns than if they had not organized, the non-members have profited even more. It is difficult to maintain the morale of an organization when outsiders receive the benefits of the organization in a larger measure than do the members themselves. For this reason some of the tobacco cooperatives recently have found themselves in great difficulty.

Some of us have thought we have seen an analogy between the occasional surplus of staple farm crops and the surplus credit resources of the banks before the adoption of the federal reserve system. The resources of the banks as a whole were adequate for the business of the country as a whole. It frequently happened, however, that an unusual demand at some particular place exceeded the resources of that community, while in other sections there were ample credit resources in excess of their need. The federal reserve system was designed, among other things, to mobilize the credit resources of those banks which had a surplus and employ them where the credit resources were deficient. It sought to do in reference to space with surplus credit resources what should be accomplished in reference to time with the occasional surpluses of the farm.

We have therefore suggested a federal farm board. We have proposed that such board should be vested with power of inquiring into certain facts. These facts are: Is there a surplus of some basic farm product? Does this surplus depress the price below cost of production with a reasonable profit? Are the growers of that product sufficiently organized cooperatively to be fairly representative of all the producers of that product? If the Board finds that

all of these questions must be answered "yes" it is then empowered to authorize the cooperative to take control of the surplus. The only aid from the Government which the cooperative would require would be that the Government should distribute among all the producers of the particular commodity the cost to the cooperative of handling the surplus. Neither the Government nor the Government Board would determine the price. Nor would even the cooperative itself "fix" the price in any other sense than industry generally determines prices. It, like every other industry, would study all the conditions affecting the particular commodity and from time to time decide upon a price which conditions would seem to warrant. It would simply enjoy the advantages which come from organized selling.

It is urged, however, that if a program of stabilization such as I have suggested were carried out, there would be greatly increased production, with a surplus so large as to become altogether unmanageable. Is there any basis for this fear? The argument of those who think so runs something like this: "The farmer is now producing at a loss, and still he produces more than the world presently needs. Hence low prices. If he were now receiving profitable prices he would produce vastly more, with further demoralization of prices."

There are, it seems to me, two vital defects in this line of reasoning. In the first place, the argument assumes that in agriculture, as in industry, unsatisfactory prices result shortly in reduced production. This is not so. In industry only a small percentage of the cost of production is in overhead charges. By far the larger factor consists of wages and raw materials. When, therefore, the manufacturer finds himself accumulating a larger surplus than he thinks prudent, he can reduce his production as greatly as he may desire, with something like a corresponding reduction in the cost of operation of his plant. Not so the farmer. The overhead charges of the farmer are the main items in cost of production and they do not materially change from year to year, whatever his acreage in crops. He furnishes for the most part his own labor.

His taxes remain the same. His interest charges are the same. His equipment does not greatly vary. Therefore, when prices are low, he must increase his acreage of cash crops in order to meet his cash outlay, even though he knows he is not receiving cost of production for a single unit of his product. To illustrate, if the farmer's taxes and interest and the bare necessaries of life for himself and his family require a cash outlay of $2,000, and prices are low, he must push his acreage in cash crops to the limit, with the hope of securing the $2,000 which stand between him and bankruptcy. Acting as an individual he cannot do otherwise. The more desperate, therefore, the financial situation of the farmer is the more is he inclined to maximum production until he reaches the very end of his resources.

In the next place, any abnormal increase in production would require the employment of new capital in agriculture. As Sir Josiah Stamp points out, new capital will be tempted into agriculture only if the rewards there are larger than the rewards in other industries. It is not proposed by anyone, so far as I know, so to change the situation as to make the rewards in agriculture larger than they are in other fields. Indeed, if the farmers should receive no more than the mere cost of production they would be much better off than they are to-day. They certainly would be satisfied with a modest return upon their capital employed—a much smaller return than industry generally enjoys. Capital therefore would not be diverted from other activities to agriculture in that situation.

And then the argument proves too much. If it be true that the farmer will overproduce simply because he is getting for his product cost of production with some profit, it follows that the farmer must always sell his product at less than the cost of production. This cannot be so unless we are to revise completely our economics.

Suppose, however, as some fear, that during the next few years while agriculture is readjusting itself under the plan I have outlined, there were an unwieldy surplus of one or more crops. This, as I think I have shown, could not be true for long. Surely some way could be found dur-

ing this period of transition to curtail the acreage without bankrupting the producers.

It is also objected to the program I have been discussing that it will increase the cost of living to the consumer. This may be so temporarily, though in a much less degree than is supposed. However, taking a long time view, it should have just the opposite effect, as I think I shall be able to show.

The National Industrial Conference Board, in its admirable report upon The Agricultural Problem recently issued, finds that agriculture has been able to go on in recent years "largely through sacrifice of its capital assets and through sacrifice of the soil resources of the nation."

It is clear that the great agricultural plant of America has been running down at a dangerous pace. Of course, this affects, and affects deeply, the farmer. However, it involves the very life of the nation as well. The people who live in the cities naturally are inclined to interest themselves only in the immediate price they have to pay for food. They do not concern themselves as to whether or not the farmer receives enough to enable him to go on producing. And yet they are vitally interested. For if the farmer does not receive an adequate price he will finally cease to produce. No one, whether manufacturer or farmer, can go on indefinitely producing unless he receives at least the cost of production for the thing he sells. The result will be fewer farmers. This result is already in evidence. A report recently issued by the Department of Agriculture states that the farm population of the United States was reduced by almost a half million during the last year. This trend cannot go on very long until there is a shortage of food, with abnormal and unnecessary high prices to the consumers of food. And that is what the economists predict if nothing be done to avert the calamity; relatively low prices to the farmer for a number of years, and then, because of a shortage of supply, abnormally high prices. The city dweller, therefore, is vitally interested in having the farmer receive such price for his product as to enable him to go on producing.

Experience in other industries has shown that the producer and the consumer are both best served as prices tend to become stabilized. Progress in an industry is measured by its approach to stabilization of price. Wide fluctuations in the price of any commodity always result in a loss to the producer and consumer alike. As one able writer puts it:

"Fluctuations only benefit the speculative middle-man. When prices soar, the producer rarely receives the full value of the increase, but the consumer invariably has to pay it. A severe fall in wholesale prices is very rarely fully reflected in the retail price to the consumer, but is always completely felt by the producer. It would therefore seem that stable prices would benefit both the producer and the consumer."

The tendency in America for the last quarter of a century has been toward stabilized prices save in agriculture alone. In agricultural products, however, the swing of prices in recent years has been more violent than ever before. To illustrate: during the years 1923, 1924 and 1925 the price of hogs fluctuated about one hundred per cent. The fluctuation in the price of pork products to the consumer was about a third of this. During the same period the price of wheat fluctuated one hundred per cent. The fluctuation in the price of bread to the consumer was less than five per cent. It is clear that the consumer derives no benefit from the low price at which agricultural products at times have sold.

It is evident that in the interest of the consumer as well as of the producer we should find some means for stabilizing prices of farm products. The price of a commodity can be stabilized only at a point near the cost of production. For if the price continues below cost of production, a sufficient number of producers will fail, production will fall below the needed requirements, and prices will rise. And if an attempt be made to stabilize the price above the cost of production plus a reasonable profit, capital less profitably employed elsewhere will flow into the production of that particular article, the supply will exceed the needed re-

quirements, and prices will fall. Therefore it follows that if we shall succeed in stabilizing farm prices it will have to be at a point covering cost of production with sufficient profit to induce the farmers to go on producing.

It may be that there is a better solution of the problem than the one I have suggested. I am not insisting upon any particular remedy. I only say there is a farm problem of the gravest importance and that a solution must be found if we would preserve our civilization. There are many earnest men who believe there is no solution. I come across them with increasing frequency. They say that there has been always a conflict between rural and urban civilization; that in this conflict rural civilization always has gone down; that there is no reason why we should be an exception to the general rule; that a decaying agriculture always has marked the first stage in the decline of a nation's greatness, and that we are helpless in the grip of this relentless law of the rise and fall of nations. I cannot yield to this gloomy view.

I do agree that our rural civilization is in a perilous state. I agree with them when they say our nation cannot long survive the decay of its agriculture. I cannot follow them, however, in their despair of finding some power somewhere which will arrest this decay. I have more faith in the capacity of society to save itself. Our civilization as contrasted with all previous civilizations has been marked by an increasing control of man over the forces of nature and a subjection of them to his own use. I believe we are entering upon a new era in the domain of the social sciences. Just as in the material world man has increased his dominion over the forces of nature, so in the world of men we shall learn more and more how to make the institutions of men respond to the needs of men.

THE OUTLOOK FOR AGRICULTURE [1]

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The very brief time at my disposal will not be devoted to a weather forecast, although the character of the weather vouchsafed to the farmer from season to season is the most immediately important factor in his prosperity or distress. Neither shall I attempt a forecast of general business as it impinges specifically upon agriculture, though it might seem that questions of wage rates, employment, and trade activity influence quite largely the outlook of the agricultural producer. It is obvious that both these groups of influences will effect deviations either up or down in the farmer's line of prosperity during the years just ahead of us. But there are also certain basic characteristics of the industry which, in a still more fundamental way, will influence its major trend during the next ten years or so. It is to these factors in the long-run outlook that I shall address myself, classifying them under two heads: (1) the technological situation and (2) the nature of economic organization and institutions with which this technological situation is to be met.

With reference to them I shall announce my thesis curtly at the start in the following terms: *The outlook for American agriculture is far from bright, the industry being faced by portentous technological changes while its organization and institutions are such as to make extremely difficult, indeed in large part impossible, a prompt and suitable adjustment to these circumstances.* Stated as a paradox, the outlook for agricultural production is so good that the outlook for agricultural prosperity is distinctly bad.

It seems to be a popular assumption that the disturbing influences injected into agriculture in the latter part of the nineteenth century have passed and that farmers are therefore in a position to settle down in peace to the pursuit of their calling. The years from about 1900 to the outbreak of the World War gave considerable color to such a theory and, dis-

[1] This paper was read at the seventeenth annual meeting of the American Farm Economic Association held at St. Louis, December 30, 1926.

missing the disturbing events of the war and post-war period as being abnormal and temporary in their character, we might assume that, as has been jubilantly asserted in certain quarters, the farmer's situation is with minor or temporary exceptions again favorable and our agriculture might confidently count upon a rapidly stabilizing and prevailingly prosperous future during the next decade or generation. A careful examination of the facts in the situation, however, will show that this optimistic view overlooks certain elements of great importance. It is based upon the major premise that, while virtually free land, cheap transportation, and horse-drawn implements operated cumulatively to produce a revolution in agricultural conditions after the Civil War, this extraordinary conjunction of stimulative circumstances has now given way to conditions establishing a fundamentally different trend. It lays great stress upon the nominal passing of the agricultural frontier and minimizes the significance of the admittedly less spectacular, but more persuasive, recent changes in the technique of agricultural production. Finally, it assumes that the growth of population will follow in the future the trend of the past.

Conclusions of this tenor call for cautious and discriminating scrutiny rather than complete and uncritical acceptance. It is obviously impossible that there could be again so stupendous an outpouring of sturdy, ambitious, shall I not say ruthless, pioneer farmers upon such an unexampled treasure land of natural resources. But the bursting flood of production that ensued from that debouch was the product of no noteworthy improvement in the technical quality of husbandry—was indeed accompanied by many lapses to more primitive methods. Horse-power machinery was the period's outstanding technological advance. Furthermore, much of the increase in our farming population during those years came merely through the shift from older agricultural regions in our seaboard states or Europe. Finally, we should remember that the greatly increased product was poured into markets whose absorptive power was being rapidly increased by the swiftly advancing process of industrialization and the accompanying rise of consumptive standards.

Recognizing clearly the drastically changed situation to-

day, we need to consider carefully whether the widespread dissemination of a steadily progressive technique of agriculture over our present expanded domain, even though further increments be only relatively small, may not produce a ratio of product to the present and prospective digestive powers of markets threatening results as disruptive to the industry as those of virgin land and the self-binder upon the farmer's fortunes during the eighties and nineties of the last century.

I believe that the keynote of this problem on its technological side is to be found in the fact that we are only just now coming into the stage of effective and widespread application of scientific methods to the production of agricultural products as a whole. This assertion runs counter to the general assumption that for some decades back we have had "scientific agriculture" in the United States. The fact is that a science of agriculture had been quite rapidly developing after the establishment of the Department of Agriculture and the land grant colleges in the late sixties and early seventies, and more particularly after the inauguration of agricultural experiment stations in the late eighties, but that only a smattering of this scientific knowledge had been transmitted to the rank and file of farmers. The actual practice of agriculture therefore lagged far behind the frontier of knowledge which had been pushed out so rapidly by this corps of scientific workers.

Up to the end of the nineteenth century we were still in the stage of exploitative development of a rapidly expanding—not to say over-expanded—land domain. Between that time and the opening of the World War the more rapid rise of agricultural than of industrial prices caused the public some concern as to the future of agricultural supplies. This, in turn, gave rise to the popular, though ill-considered, cry of "back to the land," but also, on the other hand, led to a more thorough-going effort to bring the results of scientific knowledge effectively to bear upon the average practice of agriculture. The demonstration system inaugurated in the South rapidly developed into the county agricultural adviser and farm bureau type of organization for the country as a whole, and was combined with a very

substantial advance in agricultural extension work by the land grant colleges. The comprehensive organization of this system has embraced not only widespread and effective adult education, but also an extensive scheme of boys' and girls' club work which, joined with the development of agricultural high schools, has gone far toward teaching the practice of scientific agriculture to the rising generation at the beginning rather than midway or near the end of their working lifetimes.

The real significance of this movement it is still hard to measure, but it is obvious that its actual effects have been much obscured by the fact that the period during which it has come into operation has been practically all embraced within the disturbed conditions of the war years and post-war economic depression in agriculture. A few illustrations will, however, serve to suggest qualitatively the changes which have been taking place.

In the old days hogs were produced under a system of springtime breeding, slow growth, and wasteful fattening in filthy sties with such a thing as "hog sanitation" unthought of, and losses from cholera and other diseases always heavy and at times of epidemic almost devastating. Today the fundamentals of scientific breeding, feeding, and disease prevention are quite widely disseminated through the specialized hog-producing regions. The use of pasturage, tankage, and mineral mixtures as economical supplements to corn is widely and effectively practiced. Farmers know how to construct and maintain sanitary quarters, and the majority of them have their pigs vaccinated by the veterinarian or, in no small number of cases, do it themselves. As a result, larger litters are raised (frequently a fall as well as a spring litter), quicker growth is obtained, and return per unit of outlay distinctly increased. In 1900 it was considered a good performance if a sow raised five or six pigs which would attain a weight of 200 to 225 pounds at about eight months of age, say a 1,200 pound litter. In 1922 Indiana inaugurated the first "ton-litter" contests. Already we have records of numerous litters in that and other states which have produced a ton and a half and occasionally two tons of pork by the end of a six-months period. These extreme results are of course demonstrational

and may be pushed to uneconomical extremes. But so careful a student of the hog and corn industry as Mr. H. A. Wallace estimates that the average of all farmers, good and bad, in the Corn Belt today are able to produce a hundred pounds of pork on at least one bushel less corn than was the average performance 20 years ago. This means an increase of nearly 10 per cent in the efficiency of one of the largest branches of our agriculture.

The significance as to the future of agricultural supplies is even more striking when we realize that the progress of scientific breeding of corn and the actual adoption of scientific methods of seed selection and cultivation has resulted in extending the limits of the Corn Belt a considerable distance to the north, notably in the states of Minnesota and South Dakota. This expansion of the domain of the most efficient food producing plant known to our agriculture into still cooler regions by the use of the silo to preserve a not completely matured crop is enhancing the actual and potential productivity of the best part of our agricultural domain in a striking, one might almost say revolutionary, manner.

The repercussions of this latter development are particularly significant in the dairy industry, in which likewise the ratio of return to outlay has been rather strikingly advanced. Scientific breeding and feeding have set up during the last few decades higher and higher records only to have them broken one after another at the briefest intervals. In 1899 the champion Jersey cow had an annual output of 10,218 pounds of milk and 579 pounds of butterfat. Today the grand champion cow of that breed has a record of 18,632 pounds of milk and 1,048 pounds of butterfat.

I can well remember when we were looking forward to the appearance of hens that would have an authentic record of 150 eggs produced within a single year. Only a few years of trap nesting and line breeding produced 200-egg birds, and today the individual record stands at 335, with owners of commercial plants attaining flock averages of well over 200 eggs. Such results are secured with only moderately increased outlays for feed and labor, but largely through applied scientific knowledge and with distinctly lower unit costs.

To cite the development of pure strains of cereals, selected for disease resistance or low moisture requirements, or the prolificacy of various hybrid strains would go beyond the limits of the present paper, as would also any extended account of the significance of work done in plant pathology and economic entomology, the results of which are being so rapidly incorporated into standard farm practice. The point of all this to the economist is that, for the moment at least, it appears that the technological progress in this field is enhancing productivity at a rate faster than the growth of requirements for food and raw materials.

"Food-will-win-the-war" campaigns stimulated the move toward heavier agricultural production. But the war stimulated production also in some very advantageously-placed competitors of the United States. The post-war tendency has been toward greater agricultural self-sufficiency in Europe, whereas the price decline here has spurred our farmers to even greater efforts in the direction of productive efficiency. With prices per unit low and fixed obligations high, the utmost effort must be expended toward securing a large output.

It may well be argued that this is a fundamentally wholesome process since it tends to free more and more men from the production of basic foods and raw materials to contribute more to build higher and broader the superimposed structure of our civilization. And it is true that a large number of workers have left agriculture during the last five or six years. The net loss of rural population is estimated at somewhere around three million. But the evidence seems clear that this process has not moved fast enough or is not sufficiently well directed to prevent widespread distress among farmers.

Probably the most striking single instance in the general picture I have been drawing is that of cotton. Here average yield has been drastically curtailed during recent years by the depredations of the boll weevil. It has been no difficult matter to meet these losses from insect damage by an increase in cotton acreage, which mounted from less than 25 million acres in 1900 to nearly 49 million acres in 1926. Meanwhile, however, the resources of science have been brought to bear upon

the problem and have devised methods of control which are commercially practicable and are just now beginning to be popularly adopted in the Cotton Belt. Assuming a spread of these practices of weevil control comparable to the adoption of commercial spraying in the horticultural field, or vaccination for hog cholera or black-leg among cattle, it seems fair to expect a rising productivity in the cotton section which would have the double effect, first, of reducing the price to the grower at a rate exemplified in the decline of last year and this and, second, by throwing such large blocks of the high cost regions out of cotton production into corn and forage crops as would seriously aggravate the production adjustment problem of corn, hog, and perhaps beef producing and dairy farmers in other parts of the country. Of course a relenting providence may redress the balance at the last moment by sending a plague upon the cornfields. Perchance some grateful Iowa town will some day erect a votive monument to the corn borer as a Georgia village did to the boll weevil.

This situation as to probable supplies must be viewed in its relation to the probable trend of demand. Besides the constriction of our export outlet by the drift toward greater self-sufficiency in Europe and the growth of some of our strong competitors in the export field which have been already briefly alluded to, there are some elements of weakness even in the domestic situation. Somewhat ironically, the farmer's drive toward greater efficiency through the introduction of trucks and tractors has come back as a boomerang by curtailing the demand for horse flesh and for large quantities of oats, corn, and hay, upon which work animals are fed. This movement away from horse power on the farm has been paralleled by the even more complete substitution of gasoline or electric power in the cities and has resulted, it is estimated, even between 1920 and 1925 in a decline of 12 per cent in mature horses and mules and over 50 per cent in colts on farms, with a drop during the same time of nearly one-third in the number of horses and mules in town. This has released 9.5 million acres formerly devoted to the production of feed crops, giving the farmer a serious problem of finding a substitute crop in lieu of oats, which have occupied a place of major importance in the systems of rotation used over large areas of the coun-

try and contributing to the congestion of the corn market. As a last possible complication, certain mid-West experiment stations are now demonstrating that the feed for the remaining horses can be produced by merely planting the roadsides to alfalfa.

Nor are these the only weak elements in the demand situation. The substitution of labor-saving devices for rough manual labor and the growing ratio of factory and office employment, better heated street cars and work-shops, enclosed automobiles, and the general character of present styles are charged with responsibility for a lighter food consumption and curtailed textile requirements. Finally, science has substituted a new textile, made from wood pulp into rayon, and promises, or threatens, the development of still other substitutions of non-agricultural origin. Of some significance also is the tendency toward more thorough reclamation and reutilization of cast-off materials.

All in all, therefore, the outlook for agriculture has as one of its important elements the prospect of frequently recurring or rather persistently maintained periods of such redundant production as to depress prices to an unprofitable level. In other words, agriculture is in an epoch of chronic surplus rather than one of chronic deficit and what we are pleased to call "pressure of population on the food supply." This situation I interpret as involving a tendency toward the decline of agricultural prices faster than costs can be reduced by a majority of the agricultural workers. Doubtless the most proficient of the group can survive and even prosper in a mild way in such a transition period, but the main question is how the industry as a whole is circumstanced to meet the situation, the difficulty, if you please the crisis, outlined above.

Let us turn, therefore, to a consideration of our second proposition. However important in and of themselves may be the technological facts so imperfectly sketched above, their ultimate significance is not to be judged absolutely but relatively, that is, with reference to the ability of the industry to make such changes in its organization as will make it easy or difficult to cope with the situation by which

it finds itself confronted. Here, also, I fear the economist's analysis must be somewhat pessimistic.

"A little knowledge is a dangerous thing," and this is true also of a little industrialization. Agriculture has acquired a smattering of science and a partial application of power machinery—about enough altogether to hold prices below a profitable level to a majority of operators so long as the industry is unable to complete the logic of industrialization to the point where it would get the benefits, on the one hand, of maximum efficiency or minimum unit costs and, on the other hand, an effective control of production with reference to market needs and absorptive power. The first half of the journey toward industrialization, taking place under the circumstances that it has, carries the farmer so far into the red ink that he cannot go the rest of the way and arrive at the clearly discernible goal of such a development. He is constrained to save at the spigot so constantly as to induce serious waste at the bung-hole. He must practice the boomerang economies of wearing out obsolete machinery, of getting by with a high percentage of scrub sires, and of operating under the direction of jacks-of-all-trades instead of employing the best of both technical and managerial ability.

The nature of the challenge thrown down to our agricultural organization today is analogous, but by no means identical, with that which confronted the handicrafts at the advent of the Industrial Revolution. We are all aware that the difficulties of that transition were by no means met and conquered without suffering and loss to various interests in the community. Economic groups by no means adapted themselves swiftly and happily to these new changes, nor did suitable institutions spring into being over-night and start functioning smoothly as inter-related parts of a new economic regime. At the same time, however, it must be granted that a type of organization for big business, with remarkably effective devices for the marshalling of capital and the regimentation of labor under a system of rapidly progressing specialization, has made it possible for us to secure the benefits of the new industrial system with sur-

prising rapidity and completeness, with a commendably small amount of incidental economic wreckage.

I take it to be generally conceded that the problems of rapidly advancing technological progress in the field of manufactures, transportation, some branches of mining, and many fields of wholesale and even retail trade have by and large been much better met than those of our agricultural industry. Aggressive, even ruthless, leadership has forced the abandonment of the inefficient or merely badly located producing plant, the squeezing out of unsuitable or surplus workers, and accomplished a good deal of crudely effective solidarity for industries en bloc. In spite of some momentary bleeding, this has been in the nature of specifically curative surgery in striking contrast to the mustard plasters, herb tea, and faith healing that constitute the inadequate therapy of agriculture.

In the main, two things might be asked of a really adequate economic organization for the agricultural industry in such a period of strain. First would be (in the interest of society as a whole) such an organization as would enable it to take the fullest advantage of the technological possibilities open to it through adequate financing, full capital equipment, such division of labor as is possible in view of the character of the industry itself, and any other organizational features which would enable it to achieve mass efficiency and hence the greatest economy in its productive operations. This would make possible minimum unit costs for its several products.

Second, from the standpoint of a stable and prosperous industry the challenge would be for such a type of management as would make it possible to administer effectively the supplies which come forward partly through definite planning and partly through the adventitious freaks of nature, and to correlate these with its subsequent productive operations in such a way as not to continue long in the production of commodities for which no profitable market could be found.[2] This would be something analogous to the ability of organized

[2] Possibly a third element which we might include in our prospectus of an adequate economic organization would be the achieving of units of organization such as to permit of the averaging of returns between season and season and between individual, or at least local, enterprises in such a way that the disruption of the productive unit or economic instability or suffering should not follow from the ordinary vicissitudes of an occupation as hazardous as that of farming. This, however, goes somewhat outside the present field of discussion.

industry to abandon extra-marginal plants and to close down operations at times of over-supply. If my previous analysis of the technological outlook be correct, it would seem to imply considerable displacement of workers from agriculture. That is to be welcomed in so far as it means the freeing of labor as the level of efficiency is raised. However, it may be queried first whether any great shift in numbers should not await the reduction of working hours such as has accompanied the advance of efficiency in industry. If the town laborer's week becomes forty hours, should not the country worker's week and the employment of women and children be comparable—whatever that might prove to be? The more efficient work period is to be complemented with sufficient leisure in which to enjoy and consume the product of those increasingly fruitful hours. The farmer's "surplus problem" is something broader than the McNary-Haugen scheme. It is, in fact, only a phase of the surplus economy to which our profession is slowly orienting itself after having been reared in the "dismal science" of the deficit economy.

I have given perhaps too lengthy a statement of merely abstract ideals. And yet it should serve to show how great a gulf is fixed between what is economically desirable and the actual situation in present-day agriculture. It is impossible here to attempt to say whether any such ideal type of economic organization could be worked out by or for farmers or whether the agricultural group of our population could, even under the present type of organization, attain to a reasonable level of stability and prosperity in periods of ordinary or less than ordinary technological change. The point which I wish to stress, however, is that as matters stand the farmers of the country do face a period of very great difficulty through impending technological changes, and have at the same time an economic organization which leaves them exposed, practically defenseless, against the full force of this economic strain.

It is obvious that in spite of the rather doleful cast of these observations a situation of the sort outlined cannot be wholly devoid of more optimistic and constructive elements. These I should list as (1) individual success in the direction of more than average efficiency, (2) readjustment of the nation's agri-

cultural industry through the cumulation of many personally successful moves toward better farm management in the proportioning of enterprises, (3) continued shifting of workers out of farming, (4) the possible infiltration of corporate business into agriculture, and (5) the co-operative movement. All five of these are forces to be reckoned with, though in varying degrees. In my judgment, however, none of them—nor all together—can safely be counted upon really to save the agricultural situation during the next decade or so.

Popular faith has of late centered most conspicuously upon the co-operative movement. In the main, however, this represents a yearning for vicarious salvation rather than any tough and seasoned knowledge of the powers and purposes of the co-operative form of economic organization. Speaking out of some years of close contact with agricultural co-operation and careful study of both its theory and practice, I am convinced that it is destined to be a plant of slow, though sturdy, growth. It is a democratic and hence rather fumbling attempt on the part of agriculture to achieve for itself certain of the outstanding benefits of large-scale organization as demanded by the evolution of modern business conditions but so adapted as to meet the peculiar needs of the farming industry. This means both the introduction of a higher degree of economy and efficiency into the actual processes of production and marketing and also the effecting of units of organization large enough to permit of the averaging of returns and the scaling of operations to the needs of a market broadly studied and skilfully exploited. I am convinced that co-operation offers in the long run one of the most important and, quite probably, the most important single opportunity for improving the economic organization of our agricultural industry as a whole. However, experience seems to show quite clearly that the progress of co-operative organization in agriculture can at best be only very slow. I feel that during the next five or ten years, even twenty years, we shall find that neither the growth of co-operative organization in agriculture nor the growth of population in a country with the standards of living and of immigration restriction to which we appear to be committed will keep pace with the results of scientific discovery applied as it apparently will be to the practice of agriculture.

Discussion by T. N. Carver

Harvard University

There are, of course, many things in the international situation which bear on the present condition of the American farmer. There are two outstanding facts, however, relating to farming itself in this country which are of primary importance. The first is that the consumption of the great staple products of agriculture does not increase any more rapidly than the population; in fact, in some cases the per capita consumption is actually falling off. In this respect the demand for agricultural products differs widely from that of a great many of the manufactured products. In some of these cases the demand seems to be almost insatiable, the per capita consumption increasing by leaps and bounds. The other great fact is that the efficiency of agriculture during the last 50 years has increased very rapidly. This is evidenced by the increased product per farm worker. Since we are consuming no more per capita of agricultural products than we used to, and since each farm worker is producing a great deal more than he used to, it follows, as a matter of course, that there tends to be a superfluity of farm workers except as the situation is relieved by migration from the farms to the cities.

The same factors are at work on the cotton market. People are not wearing any more pounds of cotton per capita—probably not so many as formerly—so that the demand for cotton scarcely keeps up with the increase in population. At the same time, especially in the western end of the cotton belt, the product per worker on cotton farms has increased notably in recent years. The cotton grower of the eastern end of the cotton belt is feeling the competition from the western cotton grower very much as the farmers of New England seventy-five years ago suffered in competition with the hay, grain and livestock farmers of the prairie states of the Middle West.

Another factor of almost equal importance is that the truck and the automobile are doing much of the work on city streets that was formerly done by horses. The source of energy for this work is now gasoline instead of hay, oats, and corn. This has made considerable difference in the demand for those three important agricultural products.

Only two real sources of relief seem to be in sight. One is a possible increase in the foreign demand for our agricultural products; the other is a still further reduction in the number of farm workers through a continued migration from the farms to the cities. The first of these alternatives is, of course, preferable. If foreign markets could be found for our surplus agricultural products, this accelerated migration to the cities will be unnecessary. If they are not found, accelerated depopulation of the rural districts is the only alternative left.

Discussion by G. F. Warren

Cornell University

I believe that Dr. Nourse has considerably over-emphasized the ease with which production can be increased. Agriculture is a biological industry. Science is adding much to it but it can never be converted into a mechanical industry. The yields per acre of corn, wheat, oats, barley, rye, buckwheat, hay and potatoes for the states east of the Mississippi River from 1866 to 1925 are shown in Figure 1.

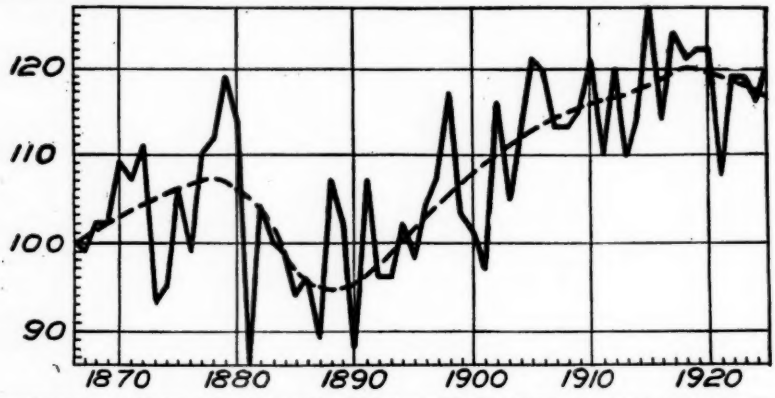

FIGURE 1.—CROP YIELDS PER ACRE EAST OF THE MISSISSIPPI RIVER
Yields declined during the agricultural depression of the eighties, and rose rapidly thereafter. Apparently they are now decreasing

During the agricultural depression that followed the Civil War, yields declined. With the better prices following 1896, yields rose fairly rapidly. If yields for the ten years 1866 to 1875 are called 100, the ten years from 1886 to 1895 would be represented by 96. The five years, 1916 to 1920 would be represented by 121, and the last six years by 116. Yields for the entire country are more nearly held up because low yielding arid land has been thrown out of use. In arid regions low-yielding land is being abandoned. This has the effect of raising average yields and obscures the changes occurring on land that remains in use.

The effect of the agricultural depression is beginning to be apparent. The rapid increase in yields per acre has been checked, and apparently, a decline has begun. The effects become apparent very slowly because agriculture is a biological industry. At the present time, farmers are laying few tile drains. They are neglecting the upkeep of buildings and soils. Since the agricultural depression will probably last for a number of years, and since the full effects of the present methods are not apparent, I believe that crop yields will decline further. When the agricultural depression is over there will, I believe, be a period in which food will be expensive. The farmers of the United States know how to increase crop yields materially. They could probably increase the yields per acre by 25 per cent over present yields without great diffi-

culty, provided prices were high enough, and provided they were allowed time enough in which to do it. There must be several years of prices that are high enough to restore confidence in agriculture before efforts to increase yields will begin. It will then require some time to check the decline before an increase will occur. When the agricultural depression is over it is probable that we will have twenty years in which much of the program of the American Economic Association will be devoted to some phase of the problems of the high cost of food.

The increase in milk production per cow is shown in the Table. In the seventy years, the production per cow has about doubled. Part of this is not due to increased efficiency but to heavier feeding. All the

MILK SOLD OR MANUFACTURED
NEW YORK STATE

Year	Pounds per cow
1855	2,646
1864-5	2,639
1870	3,016
1874-5	3,061
1880	3,392
1900	4,052
1910	4,721
1920	4,118
1925	4,451

figures in the table are probably low because the census does not obtain all the milk production. Studies at the New York State College of Agriculture indicate that the sales per cow are 5,095 pounds and the production per cow 5,500 pounds. For herds selling milk to cities, the average production is 6,209 pounds which compares very favorably with a production in Denmark of 6,300 pounds.

Record cows are by no means an indication of the development of the breed. Advanced Registry Official testing is largely an exploitation to find good cows that already existed. The progress in test work, or record litters of pigs, or yields of a single acre of cotton have about as much relation to general progress in yields, as the age of Methusela had to progress in public health.

I see no likelihood of corporations going into farming in this country. On farms, a corporation uses capital and land efficiently, but it uses labor very inefficiently when compared with family farms. In America, the saving of labor is more important than efficient use of land. We therefore, have less corporation farming than most other countries. The European farmer uses more hired labor than does the American farmer.

I also find myself in disagreement concerning the pressure of population on food supply. There are cycles in this as in other economic facts. I think we are in danger of being mistaken if we assume that the condition of the day is to continue.

We have had seven crop years of the worst agricultural depression ever known in America. The present low prices to farmers are not due primarily to over-production but are due to secondary effects of deflation. The consumers are taking the products of American farmers at 60 to 70 per cent above pre-war prices. This is the measure of

supply and demand. But owing to the lag in wages when deflation occurs, handling charges are lagging behind prices and distributing costs are so high that farmers are getting only about 30 to 40 per cent above pre-war prices. These conditions will gradually adjust themselves by the bringing on of a food shortage and by lowering of distributing charges. If further deflation occurs the time required will be prolonged and the result will be a more violent shortage of food.

Cost accounts on about five hundred Danish farms, furnish a good illustration of the effects of inflation and deflation on agriculture. In 1920-1921, American farmers were experiencing a severe agricultural

NET EARNINGS ON CAPITAL INVESTED IN AGRICULTURE IN DENMARK, AND WHOLESALE PRICES FOR THE JANUARY INCLUDED IN THE ACCOUNTING YEAR

	Wholesale prices January 1	Per cent made on investment
1919-1920	340	9.9
1920-1921	341	8.2
1921-1922	178	1.2
1922-1923	181	5.6
1923-1924	210	8.1
1924-1925	234	9.1
1925-1926	157	0.9

depression; but deflation had not occurred in Denmark, and Danish farmers were having a period of prosperity. They made 8.2 per cent on their investment. Deflation began in Denmark in the summer of 1921, a year after it began in the United States. Prices fell from an index of 341 in January, 1921, to 178 in January, 1922. Prices were about halved and profits fell to 1.2 per cent. Gradual reinflation occurred and profits rose. Wholesale prices rose from 178 in January, 1921, to 234 in January, 1925; and farmers made 9.1 per cent on their investment for the year 1924-1925. Prices then fell from 234 in January, 1925, to 157 in January, 1926; and preliminary reports indicate that profits for the year 1925-1926 averaged 0.9 per cent.

American farmers have had seven years of agricultural depression. Danish farmers had an excellent year in the first year of the depression, had a very bad year when they deflated in 1921-1922, had good years as reinflation occurred; and had a catastrophe in 1925-1926 when deflation again occurred.[1]

[1] Wholesale prices are given in various numbers of the Statistisk Aarbog, and also given in publications of the Federal Reserve Board.
See also, Warren, G. F., and Pearson, F. A., Farm Economics, December, 1926, pp. 558-571, and February, 1927, pp. 603-618.

Discussion by Charles J. Brand

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Professor Nourse has presented a very interesting and very thorough analysis of the outlook for American agriculture. He has not considered the immediate future so much as the period including the next ten, fifteen or twenty years. His effort to take a long-range view is a distinct service, but its results leave me hungry for further light on the true significance of the present conditions and on the remedies to be found for them.

In a way the course of agriculture over the longer period is of greater importance to our national welfare than the lack of agricultural prosperity that has prevailed for five years and that promises to prevail for another indefinite period—a period which is of acute interest to present agricultural enterprises. Because of the historical development of agriculture, its dispersed units and its consequent lack of integration, we take for granted the age-long and grinding competition to which farmers have been subject the world over. The exodus from the farm to the city is as old as town life itself, and is likely to continue; but when no less than three million of a farm population of little more than thirty million migrate in less than three years from the farm to the city, it is clear that we are confronted with both a short-time and a long-time tendency of serious import. In fact, we face nothing short of a revolution, which cannot continue but which will bring grave consequences before it is stopped, and if it is not stopped will within a decade carry farm depopulation to a point where it may readily assist in producing a disastrous crisis.

We cannot blink the fact that some powerful economic force is smoking the farm population out of agriculture. Although we have enjoyed unparalleled prosperity in other forms of endeavor during the last four or five years, our agriculture has continued to fall back. It is not particularly creditable to American statesmanship that it has partly closed its eyes to the problem involved in the situation and failed to seek its solution. A decline in the value of farm products from more than fourteen billion dollars in 1919 to less than seven billion dollars in 1921 was a debacle that brought grief beyond calculation. A decrease of over a billion dollars between 1924 and 1925, and over a billion dollars more between 1925 and 1926 means that agriculture is again slipping in a way that should challenge the ablest efforts of the businessmen and economists of the nation, who should be consecrated to its best interests.

A well-defined equilibrium between agriculture and industry is certainly desirable for the future interests of the republic. Over-industrialization, such as now confronts England, creates a train of social, economic and political problems that we should strive to avoid. For more than a century and a quarter, by means of the protective tariff and a multitude of other devices, we have generously fostered industry,

not necessarily purposefully but nevertheless actually, often at the expense of agriculture. While protective tariffs have afforded protection to some agricultural products, the great staples necessarily produced for export as well as for domestic consumption have rarely, if ever, shared in tariff protection. As a result the farmer has been taxed heavily not only directly on his physical visible properties, but indirectly in the customs taxes paid on dutiable goods or their substitutes, whose prices are raised by the tariff wall.

Nevertheless, I do not wish to be understood as opposing a protective tariff. I favor it. But I am opposed to a high-powered propaganda of the belief that the farmer shares to any great extent in the benefits that accrue so notably and so directly to industry and labor. I find myself in very general agreement with Professor Nourse's paper. It is regrettable but true that a good outlook for agricultural production means a bad outlook for agricultural prosperity. It is not to the credit of our national statesmanship that efficiency in agricultural production should be regularly penalized. One year after another one or more branches of our agriculture are involved in difficulties, many of them probably preventable.

In 1920 and 1921 practically all our agriculture suffered from a price decline of a violence not before experienced. Cotton promptly recovered itself and has fared well through the intervening years until now. In 1923 wheat went as low as 75 cents at the farm, but bread grew no cheaper. The wool industry, after several years of acute crisis, was definitely rescued by the emergency tariff law and its successor, the Fordney-McCumber act. In 1924 a critical shortage in the corn crop forced the marketing of hogs at a rate that created a crisis in the pork-producing industry. In 1925 a bumper corn crop, exceeding three billion bushels, smashed corn prices so much below the cost of production as to create a depression in the corn belt from which it has not yet recovered. The enforced liquidation of hogs in the previous year, purely a temporary phenomenon, accentuated the grief of the corn growers by depriving them of the usual feeding outlet. In 1926 the cotton grower has suffered from a debacle of very serious consequence. The same misfortune has happened to the apple grower and the peach grower as well as, in less measure, to other farm industries.

It is perhaps fair to say that, temporarily at least, the means of production have outrun the consumptive demand. The farmers of the world, and particularly the farmers of the United States, are able to produce more than is really needed, given present unavoidably expensive distributive procedure. The consumer is confronted with unusually high prices while the producer finds it almost impossible to show a net profit. Production is discouraged and consumption is stifled.

The uninformed or casually informed have accepted a belief that agriculture is getting back on its feet. This belief has been rather carefully promoted through much publicity, intended to preserve the desirable industrial and commercial prosperity of recent years. Many

chilly facts, nevertheless, confront us, even in those states and areas where agricultural prosperity is so widely advertised to have returned.

For instance, the mortgage debt in the state of Kansas, which in 1910 was nearly $71,000,000, had risen in 1920 to nearly $110,000,000 and in 1925 to more than $130,000,000; but the value of the mortgaged plant dropped between 1920 and 1925 from $424,500,000 to $332,700,000. In other words, while the mortgage debt increased $20,000,000 the value of the mortgaged assets decreased $91,800,000.

In the state of Kentucky, which has not been regarded as suffering particularly from an agricultural crisis, the ratio of the mortgage debt to the value of farms has increased from 29 per cent to over 43 per cent. In Missouri the ratio has increased from nearly 29 per cent to nearly 45 per cent. In a purely agricultural state like South Dakota the amount of the mortgage has increased about $11,000,000, while the value of the property has decreased over $175,000,000, so that the ratio of mortgage debt to value of farms has increased from less than 22 in 1920 to almost 43 in 1925.

The same situation prevailed last year in the agricultural states of the south, but if a census were to be taken next year the disparity would be even greater, as the price of cotton was satisfactory for practically four years, a situation not shared to any such extent by other export crops.

I am particularly interested in the effects of downward swings in agriculture upon industries that depend wholly upon the farm market for their outlet, such as the fertilizer industry. The severe depression of 1920 slashed fertilizer sales in the United States from 7,670,000 tons in that year to 4,988,000 tons in 1921; and even now, in spite of the fact that the price of fertilizer, compared with pre-war, is the lowest of the major items of farm expense, the tonnage sold has not yet regained the level it reached in 1913.

Professor Nourse has said that we need to consider carefully whether the progress already made in agricultural technique may not result in a production so large as to threaten a continued disruption of the industry, similar to that occasioned by the breaking in of new lands and the application of horsepower to improved farm machinery, which caused the depression that extended over a period of twenty years, and which culminated in the early '90's and had almost disappeared by 1900.

Co-operation is in many quarters prescribed as the cure for both the temporary and most acute as well as the long-time maladjustment of agriculture to our economic structure. I yield to no one in my appraisal of the value of co-operation and of effective effort in its promotion, but I despair of its remedial value because of its inevitably slow development. If the present temporary adversity can be alleviated by other kinds of well-warranted assistance, the co-operative movement may this time be saved from the collapse to which it has often been subject in the past. Co-operative marketing and financing associations are not

strong enough to hold the umbrella over the whole of agriculture. All who share in the benefits of stabilization must share also in its cost.

The need of the present is at least threefold: (1) Equalization of opportunities of agriculture by giving it the same legislative assistance that, for more than a century, has been given to industry; (2) removal of some of the burdens that have been shifted rather unevenly from the shoulders of industry and commerce to the shoulders of agriculture; and (3) increase of efficiency within agriculture itself. Increased efficiency involves not increased total production, but increased production per unit of area at a decreased cost per unit of product. To the attainment of this end the modern development of our knowledge of the use of artificial plant foods will contribute immeasurably as time goes on.

Two fully-authenticated illustrations of what is possible may be given, one relating to cotton and the other to corn.

A cotton grower in Mississippi operating 1,400 acres of land, using adequate applications of commercial fertilizers, has increased his production to an average of one 500-pound bale per acre, while the general average, for the United States, is less than 175 pounds per acre.

A corn grower in Ohio, by the intelligent use of fertilizer before planting and a small extra side-dressing when his corn was three inches high, has produced over 168 bushels of corn per acre as an average for ten acres. When we remember that the average corn crop in Ohio is less than 40 bushels per acre we can see that this is an extreme illustration. But the cotton illustration shows only what the average grower may readily hope to attain on a large part of our cotton soils.

In closing, then, may I say that the outlook for agriculture in the United States depends on two things: (1) Statutory action that will enable agriculture to obtain a more equitable share of the national income—a share comparable with its contribution to the national welfare; and (2) increased efficiency within agriculture itself, with a view to making greater profits from fewer acres by abandoning marginal lands and concentrating energies, with better methods, upon the more productive.

Discussion by B. H. Hibbard

University of Wisconsin

Something over a hundred years ago the classical writers on economics gained for the struggling young science the qualifying adjective "dismal." So far as is known the Agricultural Economists, in recent years, have not been instrumental in deepening the shades of the economic picture. To the follower of Malthus the joy of life has always been tempered by the gloom of a vanishing food supply. Like Croesus the farmer rolls in wealth from which he cannot realize satisfaction. His

zeal has eaten up his prosperity. His barns are filled with plenty, in consequence of which his purse is empty, his income small, his mortgage great.

Without doubt there are being used some tints other than those of the rainbow in painting the picture of future farming. Looking back over the history of American agriculture it is plain that the golden age was from 1900 to 1920. Like all golden ages it is in the past. The years since 1920 have been anything but golden from the farmers' standpoint. The outlook is not too promising, but let us hope that there are some bright spots in it.

A few years ago a book with a very striking title, Mankind at the Crossroads, appeared. This book proves conclusively that the author does not know what the future balance between population and food will be. In it, however, are many bold statements. For example: "mechanical invention, in the last analysis, probably did not increase agricultural production by a single grain of wheat." Surely it hastened the production of many million bushels of wheat, and poured the product of the virgin soil of our Northwest into the markets of the world before it was needed. In marked contrast with this Dr. Nourse suggests that the present technique in agriculture may produce a surplus during the years to come comparable in its influence with that of the post Civil War period. Let us notice what technique has done or at least helped to do during the past quarter century. In 1899 we had 52,000,000 acres of wheat producing 659,000,000 bushels; in 1909 an area of 44,000,000 acres producing about the same number of bushels; in 1926 an added four million acres with a yield of one bushel more per acre. The higher yield was due to the weather, not to technique. The story of corn is similar. From 1866 to 1875 the average production was 26.1 bushels per acre. The last three crops have averaged 26.1 bushels. Science and technique have overcome the decline in soil fertility. They could, and would, do much more if the price rose.

In 1899 we were producing 4,439 million bushels of cereals; in 1919 the amount was 4,681 million, an increase of five per cent in twenty years, and on an increased acreage. The real test of the influence of technical improvements is the effect which has been brought about on a given area. In the East North Central states on an acreage slightly larger in 1919 than in 1899 the production of cereals decreased a little, but the difference might have been due to weather. In any case the change in production per acre was negligible. It must be recognized that there were many advances in the technique of agriculture in this section during this period, but for the most part their effect was to lessen the amount of labor used, not to increase the output.

From the standpoint of per capita production we had in 1870 about 35 bushels of cereals; in 1900 approximately 58 bushels; for 1926 just over 41 bushels. In the supply of meat animals we had, per family of five, 4.6 head of cattle, in 1910 three head, in 1925 2.6 head. Of other stock there has been little change. Thus the increase in the food supply is clearly lagging behind the growth of population, or so it can be pic-

tured in a diagram. It is a question, however, whether or not the forward one of two runners can be said to lag behind simply because he loses part of his lead. If food production continues its "lag behind" for a few more decades population may overtake it. This of course depends on whether or not population should continue to increase at the present rate or at some other rate. In any case, at the present there is a pronounced pressure of the food supply on population, with more casualties from over-eating than from starvation by a ratio of ten to one so far as this country is concerned.

If one takes into account the world market and world production of food stuff and clothing fiber the point concerning the danger of oversupply in relation to technical improvements may be well taken. There is land yet to be exploited, and better devices will bring in more goods. However, better devices, so far as they apply to this country, mean in general, more intensive cultivation. Such improvements will not be applied except as they promise to pay. Thus the two-row cultivator has probably not yet resulted in more corn production. It has enabled fewer men to grow a given amount of corn.

Hence, without attempting to contradict the statement that agriculture is in danger of further financial disasters due to inventions and improvements, it does seem in point to suggest that the evidence of such calamity is wanting. Improvements which are adopted by part of the operators are an advantage to them, and tend to force the less fortunate, or less progressive out. But this principle is at work in all lines, not alone in agriculture. In any severely competitive business, and agriculture is always such, there is a large number of marginal, and near marginal, not to say sub-marginal producers. These suffer because of improvements which they cannot themselves utilize.

The outlook for agriculture suggests a survey of the present. The most conspicuous facts relating to the depressed condition of agriculture are seen in the figures representing the relative income of the leading industrial classes. First and foremost the laborers receive about 125 per cent more for their efforts than before the war. Transportation companies receive enough more to permit of a favorable status. Business was never so prosperous, as is seen in the unofficial report on the holiday "melon" crop, and in the quotations on stocks and bonds. The farmer alone is in bad circumstances, and without much prospect of a speedy recovery. Let us not be too hasty in deciding that the farmers' ills, present and prospective, are mainly chargeable to the ingenuity of the inventor of machines, or the compounder of feeds or fertilizers. Unfortunately the farmer's lack of prosperity is due largely to the success of others. Were it not for the payment of high prices for the goods he buys the farmer's balance sheet might bear a different aspect. The farmer buys the products of labor, whether in the form of fuel, clothing, food or shelter. Every item of these goods bears the imprint of high labor cost. (And this without re-instating the cost-of-production theory of value.) The melons recently cut by the prosperous manufacturers though grown in the city had many of their roots in agricultural soil. Tariff protected

goods come high to farmers as well as to others, and immigration restrictions and labor regulations and limitations work themselves out in the form of reduced net income on the farms.

For some years we have all been noticing the ups and downs of the purchasing power of the farmer's dollar. At present it stands at about 81. We have persistently been told that the city is dependent on the country; that both must prosper together if at all. Not only do the facts of the past six years belie the statement; the logic of the case, likewise, is to the contrary. One class can indeed prosper at the expense of another. The city industries have outgrown agriculture in many ways and especially have outplayed the farmers in politics. The farmer has been told that by voting prosperity to the industries through protection he would gain equally through the home market. He is now waking up to the patent fact that the home market for most of his goods is governed mainly by the level of the world market; that an import tariff on export goods is useful on the first Tuesday following the first Monday in November in carrying elections in the Middle West. The outlook for agriculture is fully as dependent on this one issue as on an impending revolution due to applied mechanics.

There seems to be a great deal of difference of opinion and misapprehension concerning the cause of the present agricultural depression. One of the most usual views is that the farmers are suffering from the effects of an orgy of speculation in land. The fact that land rose during 1919 and 1920 to figures previously unheard of, and the impossibility of paying for it, or the portion covered by mortgages and contracts, during recent years is looked upon as the main trouble. It seems to be forgotten that the troubles of the eastern farmers, not so acute as those of the west, cannot be attributed to land speculation to any considerable extent. Also that the greatest distress in 1921 and 1922 was in the wheat region of the Northwest, a section that suffered very little from high land prices. And more important still, it is forgotten that the majority of the farms did not change hands during the speculative spree, and therefore that the owners of such farms were not directly affected by the boom. These farmers, constituting an important element in the total number, have been hit by the depression only less hard than those heavily in debt. Bankruptcy has no doubt been rare among farms out of debt in 1920, but were prosperity contingent upon the absence of speculation we should find a real percentage of our farm people getting along well. The fact is that the lack of prosperity is the general rule.

Without doubt the speculation in land is one cause, and an important one in the list of farmers' troubles. The real cause, however, was the fall in prices, particularly the fall of farm prices to a lower level than was the case in other lines. After every war of the past century the situation has been the same. Farm prices fall first and farthest, and make the slowest recovery. Consequently in looking ahead we must remember that farmers make choices with respect to the technique to be employed, and that these choices are made on the basis of whether or not they will pay. Should labor-saving devices spread very generally

throughout a given branch of agriculture there is every reason to believe that the advantages would accrue to society, and the less fortunate members of the group to which the device applies would be obliged to get out of the business. After such readjustment the degree of prosperity would be about as before.

A good example of the effect of an improvement of process on those doing the work is seen in the history of the printing trade. Many lost their positions because of the linotype, yet today there are more people employed in printing than ever before. In agriculture the case is not wholly analogous since the demand for most agricultural produce is not very elastic. On the other hand few technical improvements in agriculture result in greatly increased returns from the same area of land.

In a fundamental way the outlook for agriculture depends on what is done with respect to expansion in area. Until recently the possibility of high prices was precluded by the presence of more land at low cost, always ready to contribute to an ever increasing surplus. From 1900 to 1914 we came the nearest ever known to a balanced production in this country, possibly in the world. Since the World War labor and capital have profited by still greater protection, while agriculture has suffered from an ever-increasing competition. The competition will not cease of its own accord, and it will take more cooperation and outside tolerance than we have yet seen to remove, artificially, the effects of agricultural competition at home and abroad. One of the best moves which could be made to give the farmer a period of prosperity would be to turn the submarginal agricultural land to more productive uses, largely, no doubt into forest, and stop one important source of surplus food stuff.

With this accomplished, in the interest of society, and likewise of agriculture, efficiency, instead of bringing calamity, would be a boon to the farmers who are wise enough to use it. Especially is this true since not many agricultural improvements quickly become generalized among all grades of farmers. Add to the restriction of agriculture to suitable land, the use of efficient methods, and such important devices as efficient marketing through which savings may be effected, and last but by no means least, either take away some of the government influence and power lent to the industrialists or give the farmers its equivalent; perhaps as a transitional measure it might be well to grant the farmers export bounties as an offset to the import duties they pay, along with fair treatment on the Federal Reserve Board. With these concessions inside of a decade the prosperity of agriculture will be assured, and all, farmers included, will prosper because of improved methods.

The agricultural destiny of America is closely tied up with world affairs. From the standpoint of world needs there is probably no world surplus of any considerable number of agricultural products. From the standpoint of world purchasing power there have been surpluses since 1920. The lack of purchasing power is one of the inevitable results of the War. On the other hand the failure to recover from the war pros-

tration is due in no small measure to the policy of each nation holding the others up for heavy payments of debts and reparation charges, and the outburst of a new spirit of nationalism calling for unprecedented tariffs. In the latter respect we are a prime mover. We want our war investments back, but we want them paid in cash, not goods. We have become a creditor in place of a debtor nation. These are involved matters, but their relation to the agricultural depression is beyond question.

Discussion by O. C. Stine

Bureau of Agricultural Economics

I wish to support Dr. Nourse's thesis that the outlook for American agriculture is far from bright and that its organization and institutions are such as to make extremely difficult a prompt and suitable adjustment to the conditions with which we are faced. While I would state the case a little differently from the way in which he has stated it and would present a somewhat different set of facts in support of it, I would come to the same conclusion. Dr. Warren says that he would agree with Dr. Nourse that the outlook is dark for the next ten years but he would not include the following ten years. He says that at the end of this period we shall have reached the bottom of a depression from which agriculture will recover. If we are to assume that there is nothing to prevent the continuation of the present depression, that it must continue for ten years without any relief, Dr. Warren may be right. In the past we have gone through many cycles of alternating prosperity and depression. But so has business and the business interests are endeavoring to find a way out. Business is endeavoring to eliminate or minimize the evil effects of their cycles. Why should not agriculture? We are endeavoring by educational means to persuade farmers to eliminate or minimize cycles in the production of hogs and dairy cows. Why should we not endeavor to eliminate them from agriculture as a whole? At the present time producers are swinging from one industry to another. A short time ago the wheat crop was too large, later the corn crop, and now the cotton crop is too large. Some producers will shift from cotton to wheat and other crops, then we shall have a depression in these crops, to be followed by a return to cotton, and so the shifting process continues. The problem for the agricultural industry as a whole is much greater than the problem presented by any one commodity, and we ought to try to find a solution for it.

With reference to increased production and possibilities of continuing production on a large scale, I believe that Dr. Nourse understated the situation. Unquestionably there has been a considerable increase in the producing capacity of the country and technical improvements have contributed largely to the increase. Dr. Warren seems to attribute the present situation largely to deflation. Deflation is a factor in the pre-

sent situation. But I believe, however, that the increased producing capacity is a more important and more persistent factor in the situation. It is possible that changes in the price level, inflation and deflation have some influence upon the technical developments. Before the war we had a period of rising prices due very largely to inflation, which gave the impression that the cost of living was increasing. This apparent increase in cost of living was used as an argument to increase the appropriations for the work of Experiment Stations and to build up the Extension Service. Thus were technical improvements encouraged and diffused throughout the country and we are now reaping the results. With continued deflation possibly there will be less interest in developing agricultural technique and scientific agricultural development will slacken to the detriment of the public interest.

There are other important factors, however, contributing to the increase in our productive capacity. Looking back over our history we find that improvements in transportation facilities have been important factors in causing agricultural booms. The extension of railroads and the expansion of our railway transportation systems immediately after the Civil War contributed largely to the very rapid development of our agricultural resources. Although we no longer have large areas to be opened up by the extension of railways, there remain between railway lines large areas but slightly developed. There are large areas that have scarcely been scratched. The building of new railway lines has almost ceased, but we are today weaving a great net-work of hard surface roads over the country. The automobile and the truck are reaching much land in the interior which has not been readily accessible to markets or to railway shipping points. The hard surface roads with the automobile and truck are widening the agricultural zones around cities and along the railways. With the aid of these new facilities the wave of more intensive agriculture is moving farther out upon the Great Plains and more grazing lands are being broken up for wheat and other crops. The more fertile valleys, coves and nooks among the hills are being sought out for more special cultivation and the favorable hillsides for planting orchards. The new transportation promises especially to encourage an expansion of the fluid milk producing zones of the country. All the conditions that are now being developed to make living in the country more satisfactory are inviting the more efficient farmers to go farther out from the city to look for farms with favorable natural conditions. The hard surface road with the automobile and truck may prove to be just as potent in expanding agricultural production in the future as was the railroad in the past.

The tractor on the farm is also contributing to a rapid expansion of our productive capacity. For some farm operations in some parts of the country the tractor is a greater improvement over the horse than the horse was over the ox. The tractor is multiplying the time and space of the farmer by traveling faster, drawing a larger machine, and requiring less time for its care.

I believe that Dr. Nourse gave too little attention to conditions in for-

eign countries. His paper is practically restricted to a consideration of developments in this country, with bare mention of conditions in foreign countries. Our developments in science and technique of agricultural production have spread to foreign countries and they have made contributions to these developments for themselves as well as for us. I will cite two examples. Since the war there has been a great expansion in wheat production in Canada and this expansion has been due very largely to an improved variety of wheat. Now we are promised, according to reports from Canada, another improvement, a new variety which will increase the yields on the area now in cultivation and make it possible to expand the area considerably northward. This development is as significant to us as similar technical developments in the United States. In Denmark we find a great increase in milk production per cow. It is estimated that in the last fifty years the production per cow in Denmark has increased from a little more than 3,000 pounds to nearly 6,000 pounds. The number of cows was also being increased at the same time. Dr. Warren may say this was inflation. The Danes say it is better breeding and feeding. There has been a great expansion in dairy production in foreign countries, not only from an increase in the production per cow but also from the development of new areas in New Zealand, Australia and Argentina. Exports of butter from these three countries increased from a prewar average of 123 millions to over 300 million pounds in recent years. Thus we are threatened with increased competition from improvements in technique and expansion of production on new areas in foreign countries no less, if not more, than in the United States.

On the other hand, I see more hope than Dr. Nourse for an expansion in the consumption of agricultural products. In the first place I would not assume that Europe will become more self-sufficient in agricultural production. Production in European countries outside of Russia has only approximately recovered from the effects of the war and I see no certain evidence of a general expansion beyond pre-war production. It is probable that some countries will increase their production, becoming less dependent, while others will become more dependent upon other countries than they have been in the past. Furthermore, I think there are possibilities of expanding consumption in other parts of the world. In recent years we have seen some remarkable developments in the consumption of cotton and wheat in Japan and China where there are large populations. If and whenever economic and political conditions in China become sufficiently stabilized to permit of a proper economic development of that country, she may greatly increase her consumption of some of the commodities which we produce. It has been pointed out that per capita consumption of wheat in the United States has been decreasing, but in the period from about 1894 to 1914 there was a remarkable expansion in the world's consumption of wheat. In this period there was a remarakble expansion in production but consumption expanded with it at such a rate that the price of wheat rose with inflation so that, deflated, the price was about the same at the end of the period as at the beginning of the period. It seems to me, therefore, that we ought to

consider it possible to find an expanding market in the Orient and possibly elsewhere to provide to some extent at least for our increase in production.

So much for a consideration of the outlook for production and consumption of agricultural products. To maintain a proper balance and to avoid extreme depressions we must give attention to the institutions concerned with the agricultural industry. Each needs to be investigated and reorganized to function properly in its sphere. As Dr. Nourse points out, society profits by improvements. Improvements should continue for the benefit of society but society should be willing to compensate agricultural producers to some extent at least for these improvements. A man who writes a book can have a copyright which guarantees him the profits of that book for several years. The inventor of a machine can obtain a patent which guarantees him the profits from this machine for a period. But improvements in agriculture are at once given to the public and the producer has no means by which he can protect himself. He not only gets no profits but he may even be a great loser from the improvement to which he has contributed. The fundamental problem in the situation is, how to harmonize his individual interest and the mass interest. How can we prevent improvements resulting in over-production or in prices too low to give adequate returns to producers? If the situation is to be left alone to free competition, the best remedy may be a go-to-the-city movement. Farmers are leaving the country to go to the city but not fast enough to prevent depression. Perhaps we should organize and develop a go-to-the-city movement comparable to the back-to-the-farm movement of pre-war days. The producer operating on marginal land, poorly equipped, or otherwise inefficient, transferred to the city may become an efficient producer of other goods and a good consumer of the products of the farm. He will thus relieve the efficient operators from low standard competition and at the same time improve their market for what they produce.

In speaking of the institutions, Dr. Nourse mentioned particularly cooperative marketing. I wish to emphasize the suggestion that he makes that cooperative marketing as at present organized is not fully equipped or sufficiently developed to accomplish the desired results. The problems that are now facing cooperative marketing organizations in California have been presented here at these meetings by Professor Erdman of California and Professor Vail of Minnesota. They have pointed out that cooperative marketing has functioned well in developing production and better marketing machinery but that these cooperatives are now faced with a problem of properly adjusting production to market needs or finding an outlet for surplus production. Turn to Denmark where cooperation has been in the process of development for many years and has been thoroughly tested out, and you find the same situation. These cooperatives have functioned admirably in improving livestock, increasing production, finding better markets, placing products on the market to command premiums, but Denmark appears to be just as much subject to depressions as is the United States. Professor Warren has pointed out

that in Denmark last year the net earnings on farm investment dropped to nine-tenths of one per cent as compared with 9.1 the year before. He attributed this to deflation in Denmark. It is not all deflation. There was a similar depression in 1921-22 when net profits fell to 1.2 per cent from 8.2 the year before. Denmark like the United States has greatly increased her producing capacity and is meeting increased competition from foreign countries. It seems evident to me, therefore, that cooperative marketing both in Denmark and in the United States has a new lesson to learn if it is to cope effectively with the problems inherent in adjusting production to market requirements, not only for a specific commodity at a given time but as a long-time proposition and for agriculture as a whole as well as for individual industries.

In conclusion, I would summarize by saying again that the great problem is to harmonize the individual interest with the mass interest and to eliminate the ups and downs of the agricultural industry. It is more than the elimination of the cycle in any particular industry, as the hog industry, or the dairy industry. It requires a balancing of the enterprises and a maintenance of the industry on an even keel over a long period. Our institutions need to be reorganized and made to function to this end.

NET EARNINGS IN PER CENT OF CAPITAL INVESTED IN AGRICULTURE, DENMARK AND UNITED STATES, 1919-20 TO 1925-26

Year	Denmark Per cent	United States[1] Per cent
1919-20	9.9	6.3
1920-21	8.2	.5
1921-22	1.2	1.2
1922-23	5.6	3.2
1923-24	8.1	3.5
1924-25	9.1	4.4
1925-26	[2]0.9	4.6

Figures for Denmark from "Meddelelser fra Det Landökonomiske Driftsbureau," Nos. 1, 6, 9, 12, 15, p. 7. Figures for United States from "Crops and Markets" Supplement for July 1926, p. 228.

[1] U. S. figures represent net income available for capital invested in agricultural production, including rewards for management.

[2] Reports from 200 farms; results for other years from 466 to 670 farms. Figure for 200 farms in 1924-25 was 9.6 per cent.

Rejoinder by E. G. Nourse

Prior to the St. Louis meeting I had described my paper to a friend as "provocative rather than conclusive." The lively discussion which followed its presentation seemed to confirm this estimate. While both formal and informal discussion brought considerable support to the views expressed in my paper, there were possibly more numerous, and certainly more vigorous, statements of dissent. A considerable amount of informal discussion has not been reported, but the printed record above covers most of the points raised.

To my mind the most interesting feature of the whole discussion is that about half of it is extraneous to any and all issues raised in my paper, most of the other half of it relates to my first major proposition—the economic significance in the trend of agricultural technique during

the next decade or two—and in Dr. Stine's paper alone was any real notice taken of my second major proposition, namely, the inadequacy of existing or apparently developing agricultural institutions to effect a satisfactory adjustment to actual conditions. Possibly the languid interest in this issue thus evidenced on the part of even professional students of the economics of agriculture illuminates the problem of why the active leaders of farm organizations have proved such blind and futile captains of their host in this period of distress.

In the main, it seems to me that much of the discussion rests on a shaky foundation, because it looks at supply figures in absolute rather than relative terms, failing to recognize the fact that America's future is essentially not that of an exporter of staple farm products as it was in the past. Professor Carver's dictum that "two real sources of relief seem to be in sight; one is a possible increase in the foreign demand for agricultural products" cries for the support of adequate evidence that a revived foreign market is to afford the actual means for rescuing the depressed branches of our agriculture. My own views on this matter have not changed in broad essentials since the publication of my "American Agriculture and the European Market." Dr. Stine, whose opportunities have been exceptional for studying this problem, supports my general position, though suggesting a heavier emphasis than I have given to the importance of our competitors in supplying the European market and less to the expansion of European agriculture. His observations on the improvements in technique that have accompanied expansion of area in these competitors of ours is a valuable supplement to my own analysis of the domestic situation. But as for significant expansion of consumption of cotton and wheat in China and Japan during the 10 to 25-year period of which I am talking, it seems a forlorn hope indeed, with China just crowding the foreign trader from her ports and preparing to consummate a political and economic disintegration unmatched anywhere except in Russia.

It must be freely admitted that the trend toward greater productivity which I have postulated is not briefly and satisfactorily demonstrable. It may be, as Warren suggested orally, that the evidences which I have picked were unhappy, or even stupid. Still, admitting (as I did in my paper) the demonstrational rather than practical character of certain performances for record, I am disposed to feel that what can be done by the skilful performer with a selected individual does bear some relation to the capacities both of farmers and of livestock. A succession of high-water marks are perhaps as good a basis of comparison as any other which can in practice be secured. What seemed to me much more significant was Wallace's observation about the efficiency of the rank and file, and to this no one took exception.

Professor Hibbard feels that evidence is wanting to show that increase of productivity causes any threat to farm prosperity, opining that the two-row cultivator results in less work rather than more corn. This seems to put him closer than one might expect to Professor East's view that "mechanical invention in the last analysis probably (does) not

increase agricultural production by a single grain." The whole point is that greater productivity, whether based on the progress of biological or mechanical knowledge, creates an alternative of greater pressure of supplies on the market or of adjustment downward in the agricultural labor force. My suggestion was that as a matter of actual fact I do not believe that the shifts out of agriculture are or will be sufficiently rapid or well directed to prevent recurring redundance at numerous times and places during the years just ahead of us. Professor Hibbard seems to speak from the quiet atmosphere of the professor's study, peopled with the shadowy forms of economic men, as he says: "Should labor-saving devices spread very generally throughout a given branch of agriculture, there is every reason to believe that the advantages would accrue to society, and the less fortunate members of the group to which the device applies would be obliged to get out of the business. After such readjustment the degree of prosperity would be about as before." This is irreproachable as abstract logic, but do farmers really effect these adjustments so neatly? What, in sooth, is all the present ruction about? The advantages of improving technique *are* accruing to society, the less fortunate farmers *are* being forced out of the business and/or to lower standards of life, and prosperity *will* no doubt return to about its old level when this has been accomplished. But I was trying to point out that we are in for a rather continuous period of such readjustment with a good deal of suffering which might be avoided if there were more constructive leadership and not so much *laissez faire* complacency.

In particular, I challenge the wisdom of those who proceed on the theory that what they call "rural depopulation" today is something which we should attempt to check or those, including two of the discussers, who think the situation can be saved by making better farm managers of a large number of those now engaged in agricultural production. Professor Warren is afraid that people will leave the farm too fast and return too slowly. I hesitate to set my knowledge of farmers against his, and yet everything I know of rural behavior leads me to believe that they will leave too slowly and return too promptly for their own good. I just can't seem to get alarmed about any prospect of scarcity prices in the United States during the period (10 to 25 years) with which my paper was exclusively concerned.

Professor Warren (speaking at St. Louis) found himself in strong disagreement with my paper on every point except that there is an unfavorable outlook for agriculture today. He said that my analysis had emphasized all the unimportant items in the situation and had ignored the one of real significance, namely, that agriculture is suffering from the results of post-war "deflation." Professor Hibbard's argument, with its treacherous analogies about agricultural prices always falling fastest and farthest after a war, and recovering most slowly, follows this same general pattern. It would take a book (one about as long as "The Agricultural Situation," by Warren and Pearson) to make adequate reply to this general argument. In brief, it may be said that as an explanation it does nothing but restate the question. If, in a period

of deflation, agriculture loses out, whereas industry and labor hold their own or make gains, the whole question is: What are the facts as to supply and demand, distributive organization, and market control bearing specifically on the one or the other which cause this differential of advantage or loss? The difference in these attacks upon the problem is the whole difference between mechanistic and institutional schools of economic thought. I am encouraged to think that perhaps in the present instance the issue could be reduced to one largely of terminology, since Professor Warren follows his statement that present low prices in agriculture are not due to over-supply by pointing out that they will recover as soon as supplies are cut down, and will shortly become disproportionately high as a result of the continued curtailment of production.

Professor Black attacked the concept of "surplus economy" as alluded to in this paper, or as held by a certain group of economists, Professor Fay joining him in misconstruing the term. The issue, though too large to be joined here, lies at the very heart of modern economic problems. Professor Black writes me further: "If you do not believe that the population will increase as fast as the technical improvements in agriculture you should have said so and furnished all the evidence for your faith that you could find." The limits of a 30-minute paper made this hardly possible, although it seems to me that a careful reading would show that I expect the rate of our population increase to be held down by the continuance of immigration restriction and of emphasis on high living standards by a large part of our population, this latter creating a demand for refinements of manufacture and personal service disproportionate to the demand for the raw materials produced on the farm. Professor Warren's oral discussion featured the declaration: "It is my belief that population advances faster than science." That is a belief that it would be hard to disprove irrefutably, though personally I should hate to face the future with my name signed to that prediction. Neither do I believe that most people looking about us to compare the way in which the bulk of society is fed, clothed, housed, educated, and entertained today, as compared with a decade or a century ago, would be unanimous in support of Professor Warren's gloomy estimate. Even so, the more pessimistic view could be conceded as applying to the next century as a whole, without in any way attacking the validity of my position. A careful reading of the paper will show that what I was arguing was that, in the decade or so in which we just now happen to be placed, agriculture bids fair to catch up an appreciable part of 50 or 75 years of scientific advance, and this at the very moment when other developments are tending to curtail rather than expand market outlets.

Finally, it occurs to me to wonder whether the issues raised in this discussion are not of such broad and fundamental significance to agricultural economists as a group that the several points of view might profitably be elaborated by their respective spokesmen in later issues of the Journal.

LAND GRANT COLLEGE CURRICULA[1]

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This paper is based largely upon the experience of the writer who, with his colleagues, constructed the course in Agricultural Administration in the A. and M. College of Texas. Many of the principles embodied in the suggested curriculum which appears later in this paper have been quite thoroughly tested in the five years during which this course has been in operation. It is fully recognized, however, that fundamental modifications must yet be made before the curriculum shall have attained its maximum possibilities and some of these changes are incorporated in the suggested curriculum to be taken up in another place.

A curriculum dealing with the agricultural or any other industry, as the writer conceives it, should be a device for bringing together in an organized way and in rational sequence the materials of such fields of thought and of such academic tools as will contribute most to the student's vision of the industry and his ability to meet its problems. This implies that the construction of a curriculum must be preceded by a clear picture of the problems to be met and also that the subject matter composing each unit of the curriculum must contribute its appropriate share to the general objective. This view of the significance and purpose of a curriculum holds especially true for Land Grant Colleges which are avowedly functional in spirit and purpose.

There are various angles to the agricultural problem under modern conditions, each of which calls for a special kind of preparation for the men who are to cope with it. This fact has been recognized and the situation has in part been met by the establishment of various curricula. For example, there are the short courses in most Land Grant Colleges which are designed to furnish non-collegiate men useful but non-technical information relative to crops and soils, and the feeding, breeding and care of animals. Again we have the four-year college curriculum, composed in the

[1] This paper was read at the seventeenth annual meeting of the American Farm Economic Association at St. Louis, December 28, 1926.

main of technological subjects based upon the natural sciences. These basic four-year curricula are in many Land Grant Colleges modified and made more elastic by organization into groups for the two upper-class years, corresponding to the various departments of the school or college. As long as a decade ago most colleges had introduced a department of farm management or agricultural economics and had organized this into a new group in connection with the traditional technological curriculum. The foregoing types of curricula have contributed and are contributing considerably to the improvement of production technique. Some progress has also been made in the preparation of men in farm management and administration, although this has not been so marked. An entire paper might profitably be devoted to a discussion of the technological curriculum, particularly with the view of bringing these curricula up to the normal academic standards attained by other divisions of Land Grant Colleges. More urgent, however, is the construction of a third type of curriculum and to this subject the remainder of this paper will be devoted.

In recent years it has become apparent to all close students of agriculture that, in addition to the technological problems and those relating to farm management and administration, there are even greater and more complicated agricultural problems which have their locus external to the individual farm. These are the problems of agriculture as a great and complex industry, as an industry which is an integral and fundamental part of our economic life, as well as the special problems of a commercial character incident to the movement of farm products from areas of surplus production to the more or less distant centers of consumption. These problems must be explored and if possible solved. This requires trained men for research; it also requires business brains for farmer organizations and private industry auxiliary to agriculture. It requires, moreover, a vision of agriculture as something different than that of a half dozen million isolated and disconnected farmer families scattered promiscuously over the country; but instead, the concept of a relatively small number of groups of farmers whose interests center about a commodity or a related group of commodities. In some cases such a group may embrace

several hundred thousand farmers with common interests; and may be confronted with problems utterly beyond the control of each farmer alone.

The Purnell Act, and more recently the Co-operative Marketing Act are each a recognition of this broader concept of the agricultural industry. Neither of these laws can become truly effective and vital, and accomplish the purpose intended until men are trained who are qualified to conduct the economic researches contemplated by the one, or to take their places in the farmer co-operative organizations, which is the objective of the other. The effectiveness of these laws will be determined largely by the number of well-trained men the agricultural colleges can furnish for these new lines of activity. At present the work to be carried on under the Purnell Act is seriously handicappped for lack of men to carry on the economic and social research for the promotion of which the Act was passed, and the suggestion is frequently made that there is danger that the funds provided under this Act may enter into channels and be used in researches other than those for which they were primarily intended. This consummation would be unfortunate in at least two respects: first, it would retard the building up of the body of factual material upon which a true science of agricultural economics must ultimately be built, and second, it would delay the development of a curriculum possessing the vitality of subject matter and concrete material necessary to develop high-class potential research men and potential managers and executives of farmer organizations.

These two fields of effort, viz: economic and social research designed to build up a body of dependable knowledge and the training of men equipped by a vision of the field and the statistical technique to actually perform the work, must go hand in hand. Certainly every effort should be made to prevent a condition where funds designed for economic and social research should be diverted to some other use; or what is even worse, that such funds should be used ostensibly for economic and social research, but really carried on by men whose principal training has been in another field and who are not thoroughly grounded in economic theory, statistical method and other pertinent subjects.

In addition to training men for research in the economic

and social problem of agriculture and for positions in farmer organizations, as well as potential executives and administrators of these organizations, such a curriculum has still another important objective. Private business will probably always be an important factor, if not the leading one, in connection with the marketing of farm products, in agricultural finance and in the industries engaged in the processing of farm products. Again a great variety of privately-owned urban industries have sprung up for the manufacture of supplies, machinery, and fertilizer, and the like, to be used on the farms as an aid in production. The executives in all of these private lines of urban industry have a wonderful opportunity to aid agriculture, and by so doing at the same time insure their own prosperity by stabilizing their business. They must be men, however, with whom the narrow acquisitive motive is subordinated to a desire to strengthen a fundamental industry of which their own business is but a part. They must see clearly the inter-dependence between their own business and the basic and far flung agricultural industry to which they are economically connected.

A few Land Grant Colleges have discovered the problem and have within the last few years constructed a new curriculum to meet it. Universities located in great consuming and distributing centers are expanding their curricula in business administration so as to include agricultural economic subjects. The latter type of institution has some advantages in presenting this field of work, especially for graduate students, but on the whole the Land Grant Colleges seem to occupy the strategic position so far as undergraduate work is concerned. This natural advantage of the Land Grant Colleges could, however, easily be neutralized if certain well located universities should become very active in this field.

The character of the commercial and economic problems of agriculture briefly outlined above suggests in a broad way the type of curriculum which should be constructed to meet them. As essential elements in such a curriculum, together with the approximate order of arrangement of subjects, the following general plan is suggested:

Freshman Year:

a. Agricultural Resources of the World. The purpose of

this subject is to develop perspective and a broad point of view, and to lay the foundation for the more detailed studies which follow.

b. English Composition.

c. Botany, approached from the standpoint of plants as organisms for transforming simple inorganic matter into a form suitable for human use either directly or through the intervention of lower animals. This implies the use of domesticated commercial plants for illustrative material so far as possible. This course can be made to parallel the one in Agricultural Resources, each making the other more concrete and meaningful.

d. Mathematics, approached from the standpoint of a basis for advanced work in accounting and statistics. Unless the student has taken two units or more of mathematics in a secondary school with high standards, it is probable that much of the freshman year in mathematics will have to be devoted to fundamental operations. In such an event, the course in mathematics, with the viewpoint indicated above, will have to be deferred until the necessary ground work has been established. But the general principle that the mathematics offered in the curriculum should facilitate the attainment of power to use the two principal tools in economic research, viz: accounting and statistics, should never be lost sight of. Close co-operation with the department of mathematics is essential for the greatest success. It is perhaps unnecessary to state that mathematics as a means of formal discipline has no place in this scheme.

Sophomore Year:

a. Natural Science—chemistry, physics and geology—or any one, or two, of these sciences as circumstances may suggest. The same principle laid down for the courses in Botany and Mathematics should hold for these so-called pure sciences. This doubtless implies a departure from the traditional method of presentation; but no good reason has yet been produced for not using live agricultural material, fresh from the field, as a basis for laboratory work instead of the stereotyped laboratory exercises so commonly transmitted from one generation of students to the next. It might also have

the effect of awakening greater interest in the subject among the young instructors who are now conducting the laboratory work.

b. Production Economics; not confined to agriculture.

c. Regional and Comparative Agriculture.

d. General Accounting.

e. English Literature.

f. Electives, Mathematics, Psychology, History, Technical Agriculture.

Junior Year:

a. Statistical Method. As far as possible agricultural and geographical data should be used in constructing the exercises in this course. It should also be entirely feasible to develop a co-operative arrangement with the technological departments to the end that the laboratory data in technological courses might be worked up according to approved statistical method. This plan would contribute much to systematizing the laboratory work in the technological course and, at the same time, give the student an opportunity to exercise his newly acquired knowledge of statistical principles upon fresh material.

b. Agricultural Economics. This should be a unifying course, giving a broad view of the general field of agricultural economics.

c. Marketing. A general course, stressing principles rather than vocational aspects.

d. The Financial Organization of Society, including banking and the money market.

e. Public Speaking.

f. Electives: Technical Agriculture, Agricultural and Industrial Resources of North America, History, Psychology, Transportation, Farm Records and Accounts, Advanced Accounting, Mathematics.

Senior Year:

a. Social Institutions and Land Economics.

b. Co-operative Marketing.

c. Business Law and Organization.

d. Farm Management.

e. Electives: Technical Agriculture, Agricultural Sta-

tistics, Accounting, Taxation, Agricultural Resources of the State, Agricultural Prices.

I wish to call special attention to the suggested course in the junior year named "Agricultural and Industrial Resources of North America" and the one in the senior year named "Agricultural Resources of the State." These courses, together with the survey course in "Agricultural Resources of the World" suggested for the freshman year and the course entitled "Regional and Comparative Agriculture" in the sophomore year, should serve as a good background for the general course in Agricultural Economics and the course in Farm Management. Moreover, such a series of courses should constitute an excellent fundation for advanced graduate work for those who intend to enter into economic research and teaching.

A word should be said regarding the elective listed as "Technical Agriculture" in the sophomore, junior and senior years. A plan which has been used successfully is for the student in conference with his adviser to choose a crop such as cotton, or an animal industry such as animal husbandry, around which to group a series of related technological courses. For example, if cotton were chosen the student would be advised to include in his electives a course in cotton production, cotton classing, genetics, cotton breeding and cotton marketing. If animal husbandry were chosen the electives might include judging, breeding and feeding, nutrition and genetics. Such an arrangement seems necessary in view of the multiplicity of technological courses given in the large number of distinct departments which we now have in the agricultural colleges. Many of these courses are highly specialized and largely vocational in character. The problem of selection of electives therefore becomes one of choosing those subjects the underlying principles of which have a fairly wide application. For example, a good course in nutrition contains many principles alike applicable to beef cattle, dairy cattle, swine, horses and poultry. Similarly a well organized course in feeding and breeding contains principles which can be carried over from one type of animal industry to another.

The student will ordinarily take greater interest in the applied sciences, such as nutrition and genetics, when taken

in connection with a commodity which has a direct commercial appeal for him than if taken in connection with some other commodity or as an independent entity without reference to anything in particular. This plan of procedure involves no sacrifice of academic standards but, on the contrary, makes it possible to raise these standards since it utilizes and brings into play the student's natural interest in the subject and a desire to learn all he can about it.

Moreover, the foregoing plan of choosing electives among the large number of technological subjects is anticipated in the general survey course given in the freshman year and listed above as "Agricultural Resources." Here the student may obtain such acquaintance with the various agricultural commodities as will enable him to arrive at an intelligent judgment regarding the commodity of which he desires to make an intensive study. In addition to this is his own predilection for more intimate knowledge of a certain commodity. His adviser, moreover, explains to him the interdependence of the various subjects in the series so that he will see from the outset that each subject has a definite bearing upon the commodity he has chosen. A unity of purpose thus runs through the entire curriculum. The aim is to make each subject concrete and yet have it built on a sound frame work of principles. Every subject in the curriculum should be organized with a view to contributing its share to the curriculum as a whole and through this curriculum to prepare men well grounded in the principles of economics, statistics—both internal and external—and technical agriculture. Many students who have completed such a course of study will be well prepared to continue their graduate work and in this way definite progress should result in agricultural economic research, teaching and the administration of farmer business organizations. Those who go no farther in their formal studies than this undergraduate curriculum carries them, or who enter private business, should serve as a leaven in their respective communities and through the broader vision they have attained should exert an influence wherever they may be for bigger and broader agricultural statesmanship.

Current agricultural agitation, along with the many fallacies which it voices, has nevertheless an undercurrent of

validity which agricultural colleges cannot safely disregard. We hear much of the Brazilian coffee valorization scheme, the Stevenson plan for regulating the rubber supply, and within the last few days of the President of Cuba advocating the limitation of Cuban sugar to a definite maximum output. Our own eighteen million bale cotton crop seems to have converted many cotton gowers to the need of governmental assistance to handle the so-called surplus. The wheat grower is again facing the pinch of over-production. Last summer many carloads of fruits and vegetables failed to sell at a price sufficient to pay the freight to the New York market. At present the apple growers are confronted with serious losses on account of the large crop. Other cases involving the same principle could readily be cited. The dislocation in relation to market requirements is a result of agricultural specialization which in turn is an outgrowth of the principle of comparative advantage. This tendency may be expected to increase rather than diminish as transportation facilities improve. The most strategic point of attack in the solution of this problem, therefore, no longer lies in the improvement of production technique. The adjustment of supply to market demand requires, first improved farm management and administration, second, a more business-like method of merchandising each specialized commodity or related group of commodities, and, third, a policy of land utilization which will give due recognition to the country's needs for crop, forest and grazing land in correct proportion.

While the process may appear at first sight to be slow, is it not probable that curricula embodying the principles outlined above, presented by qualified instructors in the various Land Grant Colleges throughout the country, may after all prove to be the most expeditious way of ameliorating the agricultural situation and be the means of placing the industry on a parity with other activities in our economic system? Government aid for economic research in agriculture will thus become more fruitful and farmer business organizations will become more efficient as an increasing number of men, well-trained in the economics of agriculture, become available.

In conclusion it may not be amiss to point out again that in the construction of Land Grant College curricula we should not lose sight of the fact that the technical tasks of produc-

tion and the internal organization and administration of the individual farm units are but means to an end. For the farmer, in common with all business men, the goal of economic activity is the disposal of his product at a profit. The tasks preliminary to this final sale are of necessity subordinated to it and should be so performed that the final aim may be achieved. In addition, therefore, to the technical problems of production and those relating to the internal organization of his farm plant, both of which are amenable to his control, the modern farmer faces a set of problems which he cannot control, viz: markets for his products, labor markets and money markets. He, in common with all other enterpreneurs, is living in an environment of price to which he must learn to adapt himself since he cannot control it. But adaptation to this environment requires that he must obtain as complete an understanding of it as possible. And to more fully bring about this understanding will be the central task of Land Grant Colleges for the next generation.

Discussion by C. L. Holmes

Iowa State College

Dr. Buechel's paper opens a field of vast importance both to the land grant colleges and to the interests centering in the American Farm Economic Association. Not only has he presented this field to us but he has blazed a trail through it for our thought and consideration. There is but little doubt that the events of the last ten years have rendered antiquated the courses of study still being adhered to in most of our agricultural colleges. The mere fact that such colleges have lagged far behind others in the phenomenal growth in college and university attendance since the War is presumptive evidence that there must be overhauling and reorganization of the subject matter presented to students who are seeking college training for a place in the agricultural industry.

While I find myself in substantial agreement with the more fundamental propositions in Dr. Buechel's paper, there are nevertheless, a number of points in which I would differ with him either in substance or in questioning his emphasis. The first of these is one of omission and I am sure that it is merely one of an omission from the paper as presented and not from Dr. Buechel's conception of the broad problem, one phase of which he has discussed. This point may be put in the form of the following question: Are we, in the land grant colleges, training merely agricultural experts, both professional and commercial, or are we also training farmers? In these days when college education has become so greatly popularized the question of whether a prospective farmer can afford a college education in preparation for his life work

seems hardly debatable. The agricultural college will not be fulfilling its function until it is presenting the sort of curriculum which will provide the best possible training for those young men who, in the future, will have managerial responsibility for actual farm businesses. The paper stresses the importance of trained investigators in the field of Agricultural Economics and of trained administrative ability in farm organizations as the most promising means of solving the agricultural problem. I submit that while these are important, the only hope of really solving the agricultural problem through education is in extending an adequate understanding of economic laws and forces to the rank and file of farmers themselves. To a very important degree, the achievement of this objective depends upon an adequate economic training on the part of those who go into the industry from our colleges as actual farmers. They, in the nature of the case, must be the leavening influence which will eventually bring about a general appreciation of the economic forces which are at this time responsible for agricultural depression and to which, in the future, the farming industry must adjust itself if we are to see it emerge into a period of prosperity.

For this reason I believe that the problem of getting an adequate amount of economic training into the courses of study now largely made up of scientific and technical material such as chemistry, physics, biology and their applied fields, as animal husbandry and agronomy, form the major problem in reorganizing our agricultural courses of study. This we ought certainly to do though quite as certainly we ought not to leave the other undone. While we have no time here to discuss this other phase of the problem, I do feel that it should receive our attention and I believe that this organization should take upon itself the task of getting this particular problem in agricultural education a hearing before the next meeting of the Land Grant College Association.

Turning to a few comments on the specific curriculum as suggested in Dr. Buechel's paper, I should like first to call attention to the rather large amount of time devoted to economic geography; that is, discussion of our agricultural resources. I should like also to raise the question of the distribution of this material. I would challenge the desirability of introducing a course in so-called agricultural geography as an approach to more specifically economic subject matter. I raise the question as to whether the student with no previous economic training is able to appreciate the principles which should be an important part of such a course in order to give it vitality; and whether such a course, void of these principles, does not have a tendency to become merely a recital of facts derived from the Census and similar sources which is void of interest and vitality for the inexperienced student. Personally I would prefer to have the course in economic geography of agriculture given in the senior college years and make it a very serious exercise in economic analysis. This procedure will, I believe, not only be in accord with the better pedagogical principles but will save an appreciable amount of time.

As a second criticism of this curriculum, I would raise the question: Why not a course in value and price? I have made a careful examination of the outline and fail to find any course, either in the required work or the electives, bearing a title which indicates that the important problems of price and value as applied to agricultural commodities are the main theme. Certainly, for the purposes definitely stated as the objectives in this course, such subject matter is indispensable. It should certainly have at least as important a position as the course in production economics, listed for the Sophomore year.

Again, I should like to raise a question with reference to the general course in agricultural economics listed for the Junior year. What is to be the objective of such a course? Is it designed to be an introduction to this field which is to be treated in detail in more specialized courses farther on? Or is it to be a summarizing course, bringing together the various special fields which now make up agricultural economics, showing their relation each to the other? Its position in the course would seem to prevent its serving either of these purposes. The question naturally arises, have we not gone far enough in the field of agricultural economics to make such a general course as this obsolete? Certainly the problems of the economics of agricultural production, of prices of agricultural products, of agricultural land tenure, of marketing and other topics usually found in a general course cannot be treated adequately within the usual time limits. And since we are now presenting specialized courses in each of these various fields, what is the real justification for the general course? I would suggest, rather, that the work in agricultural economics as a whole be rounded out and brought into proper perspective by a course in agricultural policies presented in the Senior year.

One other question. Dr. Buechel emphasizes the opportunity which the student has through the elective privilege of specializing upon the technic as well as the economics of some single commodity. While there is doubtless a good deal of value in this suggestion, it also has its danger side. Have we not all noted many instances of a student specializing to the nth degree in some particular limited field only to find that through force of circumstances his employment subsequent to graduation takes him far away from it? I feel that in organizing curricula for agricultural colleges we must not lose sight of the time honored objective of the general college education, namely that of the well-rounded development of the student himself. One's success in his life work depends not less upon the general attributes of a well educated person than upon his training of a vocational nature.

In closing these comments I should like to stress again the proposition that the problems of a distressed agricultural industry promise to be solved quite as much by the economic and general education of the future farming class as by attacks on the external aspects of the present agricultural situation. I would not minimize the importance of the phase which Dr. Buechel has presented in this excellent paper. I would, however, emphasize the importance of getting more economics into the training of each and every student in our agricultural colleges.

AGRICULTURAL ECONOMICS CURRICULA [1]

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A common criticism that neither the right quantity of Agricultural Economics nor the right kind of Agricultural Economics is available to students in agriculture is coincident with the decrease in the enrollment of students in agriculture in Land-Grant Colleges. Agricultural Economics is here used in the generic sense to include basic courses in general economics, and allied subjects necessary for economic training which will meet the needs of the student.

Training in Agricultural Economics may not be available although the subjects are offered in the catalogue. It is thought worth while to compare the subjects offered and these students actually take with the subjects which current opinion indicates that the student should take.

The catalogues show the courses offered; Departments of Agricultural Economics were asked to supply data to show the economic subjects students of agriculture took in 1925-26 in Land-Grant Colleges; and various agricultural agencies were requested to rate twelve subjects in the order of their importance to determine what the student should take in Agricultural Economics.

Before making the comparison referred to let us consider the amount of work done by 31 Land-Grant Colleges during the past five years and the training of the staff charged with the responsibility of giving the training in Agricultural Economics.

In 1921-22, 31 Land-Grant Colleges reported a staff of 166 persons doing station and extension work and teaching in agricultural economics, 69 of whom did part-time or full-time teaching. The catalogues listed 219 subjects in Agricultural Economics. During the past four years there has been an annual increase of 24 per cent in the number of students receiving degrees. A smaller percentage increase in staff than in the number of students in agriculture receiving degrees indicates that a heavier load is now carried by the instructor. The

[1] This paper was read at the seventeenth annual meeting of the American Farm Economic Association held at St. Louis, December 30, 1926.

data from the 31 institutions reporting are representative of all the Land-Grant Colleges and indicate a rapid growth.

TABLE 1

PERCENTAGE INCREASES IN STAFF AND IN WORK DONE BY DEPARTMENTS OF AGRICULTURAL ECONOMICS[1], 1921-26.

	Increase over preceding year				
	1921-22	1922-23	1923-24	1924-25	1925-26
	No.	Per cent	Per cent	Per cent	Per cent
Station, Extension and teaching staff	166	23	24	10	26
Part and full-time teaching staff	69	26	21	10	17
Subjects offered	219	10	19	19	27
Subjects required	77	16	17	30	27
Students receiving B. S. and advanced degrees	96	42	9	28	18

[1] Agricultural economics is used in the generic sense.

The proficiency of the staff in Agricultural Economics ranks high when compared with the remainder of the staff in Agriculture. More than three-fourths of the former and less than two-thirds of the latter hold advanced degrees. The master's degree shows a 9 per cent difference which may be due to the practice of under-graduate specialization in technical production subjects followed by a year of graduate study in Agricultural Economics as the training many believe necessary for positions in Agricultural Economics.

TABLE 2

PERCENTAGE OF MEMBERS OF THE STAFF IN AGRICULTURAL ECONOMICS AND IN OTHER DEPARTMENTS IN AGRICULTURE IN LAND-GRANT COLLEGES IN 1925-1926 HOLDING DIFFERENT DEGREES

		Percentage holding		
	Members of Staff	None and B.S.	M.S.	Ph.D.
	Number	Per cent	Per cent	Per cent
Agricultural Economics	208	23	48	29
Agriculture other than Agricultural Economics	2,901	36	39	25

There seems to be little justification for criticizing the quantity of work offered in Agricultural Economics and the proficiency of the staff administering these subjects. No data have been presented, however, to show that the subjects offered are meeting the needs of the students. Two requirements are imperative: (1) that the subjects make up a well-balanced curriculum; and (2) that the subjects be available to the student.

A well-balanced curriculum in Agricultural Economics will meet the needs of the student. To find out what these needs

are a questionnaire was sent to agricultural representatives most of whom are employers of students. The questionnaire was sent to Heads of State Farm Bureaus, Masters of State Granges, Heads of other farmer organizations, editors of Farm Papers, Directors of Agricultural Extension Departments, Directors of Agricultural Experiment Stations, Deans of Colleges of Agriculture, and Heads of Agricultural Economics Departments. Twelve subjects were listed and each person was requested to rate the relative importance of each subject in training a student, with the results shown in Table 3.

It is unfortunate that Farm Economics was not used to include all divisions instead of Agricultural Economics. This would have permitted the use of Agricultural Economics as one of the divisions, thus preventing a confusion with Miscellaneous Agricultural Economics. A miscellaneous term is necessary as a catch-all to list economic subjects not included in any other division.

All the subject matter included in the divisions suggested is offered by one or more Departments of Agricultural Economics. It was not the intention of this inquiry to determine which departments nor which colleges should offer economic training to agricultural students. It concerns itself with the needs of the student and not the department nor the college which offers such training.

More than 150 questionnaires were tabulated. A contrast is seen in the ratings made by three groups. In no case did the Head of Farmer Organizations place "General Economics" as among the two most important subjects in the economic training of the student in agriculture. Agricultural editors placed "General Economics" fourth and Land-Grant College representatives rated it within one per cent of first place. Are the ratings by Heads of Farmer Organizations too low or those of College representatives too high?

All groups agree that "Farm Organization and Management" should be rated first. There is little difference of opinion in rating "Marketing" and "Farm Accounting" second and third, respectively. Heads of Farmer Organizations rate "Statistics and Prices" and "Agricultural Finance and Credit"

relatively high while Editors of Farm Papers stress "Farm Population and Rural Life."

TABLE 3

SUBJECTS IN THE ECONOMIC TRAINING OF AGRICULTURAL STUDENTS RATED IN THE ORDER OF IMPORTANCE BY AGRICULTURAL REPRESENTATIVES

Subject	Farm organization heads Per cent	Editors of farm papers Per cent	Deans, directors and heads Agr'l Economics Departments Per cent
1. Farm organization and management	26	30	27
2. Marketing	26	16	16
3. Farm accounting	22	12	9
4. Statistics and prices	9	7	4
5. General economics	--	14	26
6. Agricultural finance and credit	8	2	2
7. Agricultural history and co-operation	3	5	3
8. Land economics	--	--	1
9. Farm population and rural life	1	7	2
10. Miscellaneous agricultural economics	--	5	9
11. Agricultural law	5	2	--
12. Agricultural journalism	--	--	1

It cannot be overemphasized that although Heads of Farmer Organizations, compared with other groups, rate "Marketing" relatively high, they place the two subjects which are largely under the control of the individual farmer, namely, "Farm Organization" and "Farm Accounting" in first and second place.

The rank of each of the twelve divisions is seen more clearly if the first six ratings are used and all groups are combined to give a composite percentage figure, as in Table 3. "Farm Organization and Management" and "Marketing" tie for first place—"Farm Accounting" retains its place as third in importance, "General Economics," however, is fifth, its place being taken by "Statistics and Prices."

If current opinion of representatives of agriculture reflects student opinion, then Land-Grant Colleges are not offering, nor are students getting, the well-balanced Agricultural Economics curriculum they need. Insufficient "Marketing" and "Statistics and Prices" are offered in the catalogue and for some reason students are not taking the subjects to the extent they are offered. On the other hand, 27 per cent of the students' work is "General Economics" although only 11 per cent of the agricultural subjects listed in the catalogue for undergraduate courses are "General Economics."

TABLE 4

PERCENTAGE DISTRIBUTION OF SUBJECTS IN AGRICULTURAL ECONOMICS WHICH SHOULD BE TAKEN, WHICH WERE TAKEN, AND WHICH WERE OFFERED TO UNDERGRADUATE STUDENTS IN AGRICULTURE IN 1925-1926

Subject	Distribution of Courses		
	Recommended [1] Per cent	Taken by students Per cent	Offered in catalogue Per cent
Farm Organization and Management	16	16	11
Marketing	16	6	11
Farm Accounting	13	15	9
Statistics and Prices	10	1	8
General Economics	9	27	11
Agricultural Finance and Credit	9	2	8
Agricultural History and Co-operation	8	4	9
Land Economics	6	1	5
Farm Population and Rural Life	5	9	9
Miscellaneous Agricultural Economics	4	16	14
Agricultural Law	2	1	1
Agricultural Journalism	2	2	4
Total	100	100	100

[1] According to representatives of Land-Grant Colleges, farmers' organizations and farm papers.

This difference is largely because of the fact that 77 per cent of the Land-Grant Colleges require "General Economics" of all agricultural students as compared with a requirement of 29 per cent in the subject of "Marketing." If one subject is more important than another in the economic training of the agricultural student it should be made more available so the needs of the student can be met. Likewise if current opinion of agricultural representatives reflect student needs, a properly balanced curriculum will make the subjects "Marketing" and "Statistics and Prices" more available to undergraduate students in agriculture than those subjects were in 1925-26.

The most direct and certain way of making the subjects of "Marketing" and of "Statistics and Prices" available is to make them required subjects. From the standpoint of a desirable elective system there may be some objection to adding more required work. A condition at present prevails, however, in which more than 80 per cent of the economic training of the students in agriculture is required. Subjects which are largely or entirely elective are not available and, therefore, fail to meet the needs of the students.

A more indirect way of making more Agricultural Economics training available to the agricultural student is to offer an option in Agricultural Economics. The 15 colleges with

TABLE 5

PERCENTAGE OF STUDENTS TAKING THE SUBJECTS NAMED AS REQUIRED AND AS ELECTIVE COURSES, GRADUATE AS WELL AS UNDERGRADUATE, OFFERED BY DEPARTMENTS OF AGRICULTURAL ECONOMICS IN 29 LAND-GRANT COLLEGES, 1925-26

	Required Courses Per cent	Elective Courses Per cent	Total Per cent
Farm organization and management	12.7	3.4	16.1
Marketing	3.2	3.0	6.2
Farm accounting	14.2	.8	15.0
Statistics and prices	---	.8	.8
General economics	25.6	1.5	27.1
Agricultural finance and credit	1.7	.7	2.4
Agricultural history and cooperation	2.0	1.9	3.9
Land economics	---	.5	.5
Farm population and rural life	5.7	3.3	9.0
Miscellaneous agricultural economics	14.7	1.6	16.3
Agricultural law	.3	.3	.6
Agricultural journalism	.4	1.7	2.1
Total	80.5	19.5	100.0

options, required 8.2 credits and offered sufficient electives to make a total of 56.4 semester credits per institution. The 18 colleges without options in Agricultural Economics offered required work in approximately the same ratio with a total of 31.2 credits or 55 per cent as much work.

TABLE 6

REQUIRED AND ELECTIVE SEMESTER CREDITS OF OPTION AND NON-OPTION DEPARTMENTS OF AGRICULTURAL ECONOMICS

	Number of Institutions	Credits in Agricultural Economics		
		Required	Elective	Total
Option in Agricultural Economics	15	8.2	48.2	56.4
Without Option in Agricultural Economics	18	5.8	25.4	31.2

Land-Grant Colleges with an option in Agricultural Economics offer greater opportunity for specialization than do institutions without option. In the latter institutions the Department of Agricultural Economics is regarded largely as a service department and specialization is left largely for graduate work.

Two institutions offer a course in "Agricultural Administration" or "Agricultural Economics" which is coordinate with the regular four-year course in agriculture This may be the way to make a well-balanced Agricultural Economics curriculum available to the student.

At present more than 10 per cent of all the required courses for the B. S. degree are in Agricultural Economics. The re-

quired credits for all subjects equal 72 per cent of the credits needed for the B. S. degree. Ten per cent of the required work in economic training may not be enough to make up a well-balanced program, but even greater possibilities may be found in making Agricultural Economics subjects available by adopting a more freely elective system which will permit students to schedule more subjects in Agricultural Economics.

There is an increase in the demand for economic training in agriculture and the most certain way of making it available is to offer worthwhile subject matter. Considerable inconsistency is found in the number of semester hours used in teaching the elements of basic subjects, such as "Accounts." Two Land-Grant Colleges do not offer any accounting, many offer 6 hours and one requires 8 hours. The general average is 3.4 semester hours for the 48 institutions. The range in time devoted to a subject is somewhat dependent on the department or college where it is given. Accounts are taught within the colleges of agriculture in three-fourths the time required outside the colleges of agriculture. Some colleges do not offer an elementary course in Marketing, others offer 2 to 7 semester hours. Some colleges do not offer an elementary course in Farm Management or in Agricultural Economics, others offer from 2 to 6 semester hours in these subjects and in General Economics.

TABLE 7

DISTRIBUTION OF CREDITS IN ELEMENTARY COURSES IN AGRICULTURAL ECONOMICS AND ALLIED SUBJECTS BY CERTAIN LAND-GRANT COLLEGES

College No.	Accounts Semester hours	Marketing Semester hours	Farm Management Semester hours	Agricultural Economics Semester hours	General Economics Semester hours
19	0	3	3	3	6
29	0	2	4	2	4
13	1	3	3	3	6
6	2	2	4	2	2
41	3	4	4	6	6
36	3	7	2	0	3
17	3	3	3	0	3
18	6	0	3	3	6
7	6	3	0	3	3
25	6	2	0	4	6
30	6	3	6	0	6
14	8	3	3	3	5
Average 48 Colleges	3.4	3.0	3.2	3.0	4.3

A study of the content of these basic subjects would, no doubt, reveal considerable difference in subject matter in-

cluded under the same heading. Some needless duplication may be found also. Eleven colleges which require the three subjects "Farm Management," "Agricultural Economics" and "General Economics" give only one-half less credit for each subject than the 18 colleges which require the two subjects "Farm Management" and "Agricultural Economics."

In the 48 Land-Grant Colleges the range of total credits for these five basic subjects varies on the semester basis from 12 credits or less in six instances to 20 or more in seven instances or a variation of double the number of semester credits.

This 100 per cent variation in the time devoted to the five basic subjects may be suggestive of an even greater variation in the content of courses. A cursory examination of 900 Agricultural Economics subjects in Land-Grant Colleges showed so little standardization in titles that they represent more than 300 classifications.

It would be interesting and significant to learn the kind of subject matter which is included under the same titles in the five basic subjects of Farm Accounts, Farm Management, Marketing Farm Products, Agricultural Economics, and General Economics.

There is need for a well-balanced curriculum. It is not sufficient to offer courses in the catalogue; they must be made available according to their relative importance, if to meet the needs of the students is the aim of a good Agricultural Economic curriculum.

THE CO-OPERATIVE MARKETING ASSOCIATION AS A FACTOR IN ADJUSTING PRODUCTION TO DEMAND [1]

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The impression seems to have been made in some quarters that California co-operative associations have found effective ways to adjust production to demand. Now it is true that such adjustment is being attempted, and with some measure of success. But the attempt brings out the fact that the fundamental difficulties are essentially similar to those encountered in other places where anything of the sort is attempted.

I realize that this subject has been discussed before, particularly in Professor Jesness' excellent paper of two years ago. [2] I shall, therefore, base my discussion largely on the experiences in a state where some large-scale experiments are being tried.

I might say at this point that the term "adjusting production to demand" is an inadequate statement of the problem unless qualified. "Demand" cannot be considered as a requirement for a fixed quantity of any good except at a given moment and at a stated price. The problem is therefore one of so adjusting production as to bring forth a quantity which will result in a price sufficient to induce farmers to attempt to produce that quantity.

Such a conception will not, however, satisfy those who say that farmers as a whole are willing to produce for too low a return. But it does suggest a correction for the present situation in which there are periods of over-production when even the best farmers make little or nothing, followed by periods of under-production when even the worst farmers make money.

There are two types of variation which cooperative associations must face. One includes those long-time swings sometimes spoken of as production cycles. The other in-

[1] This paper was read at the seventeenth annual meeting of the American Farm Economics Association at St. Louis, December 29, 1926.

[2] Jesness, O. B. Relation of Cooperative Marketing to the Adjustment of Agricultural Production. Jour. of Farm Econ., April, 1925, pp. 176-190.

cludes the year-to-year fluctuations which result from variations in the generosity of Nature. The first may conceivably be headed off by adequate influence exerted in advance by a powerful co-operative association embracing a substantial part of the total volume of product. Once a surplus has been produced, however, whether it is the result of an uncorrected cyclical movement or of a yearly variation in yield, a more direct type of action is necessary. I shall discuss the two separately.

The leaders in a number of the larger California associations have frequently discussed in various growers' meetings the prospects of over-production. For example, the manager of the California Pear Growers' Association has repeatedly pointed out that the rate at which plantings of pears and other deciduous fruits have been made in recent years can mean nothing but ruin for many growers in the near future. Similarly, the manager of the California Walnut Growers' Association has pointed out that about one-third of the walnut acreage is in full bearing, that roughly another third is in partial bearing, while the rest is not yet in bearing at all. Now, the cry of "wolf" is an old one in California. "Over-production" has been a common word in the co-operative marketing literature of the state for thirty or forty years. It was the cry of "over-production" that resulted in the organization of the California Fruit Growers' Exchange. It was the same cry that resulted in the organization of the raisin growers and of others of the larger groups. Each wave of over-production has forced a successful search for wider markets. In the face of such history the outspokenness of such men as I have mentioned is largely neutralized. The optimistic nurseryman, the land developer, and the chamber of commerce promoter have naturally taken advantage of the situation.

It is impossible, of course, to measure statistically any influence which might have resulted from frequent repetition of the danger of over-production of specific products. Occasionally, however, one does get concrete evidence that such discussion has an influence. For example, specific instances have come to my attention in which men have actually given up the planting of additional pear acreages

as a direct result of public discussions. There are similar instances of prospective citrus or walnut growers who have definitely given up the idea of planting these crops as a result of association influence.

The more natural attitude of producers, however, toward any definite urge to curtail is clearly illustrated by an experience of one of the managers to whom reference was made above. He had stationed one of his assistants at the rear part of the hall. At the close of the meeting this man heard two farmers commenting on the talk. One of them said, "That man has a lot of pears planted. I know his game. He doesn't want us to increase competition and spoil a good thing for him."

Work along this line seems promising, but experience in California as elsewhere indicates that it must be carried on with an eye to producers' psychology. I refer to the fact that any campaign urging reduction in plantings or harvestings definitely leads to the expectation that many will act on the suggestion and that therefore each individual had better act in the opposite way. It seems, however, that a simple but repeated presentation of the facts can have an influence which should go a long way toward heading off boom periods and thereby heading off depression periods.

It has been suggested that since price has so powerful an influence over future production co-operation associations might well keep down their asking prices so as not to encourage increased plantings. I might cite a few instances where something of this sort is said to have been done. But I could cite more where it was not even considered, much less attempted. We must remember that directorates are made up of growers, and that to them "a bird in the hand is worth two in the bush." If the manager could conceal the fact that a higher price might have been obtained, the plan might work. But he can't do that. The independent operator will see to it that such a thing does not go unheralded.

With the same end in view it has been suggested that co-operative associations build up reserves during prosperous periods instead of returning everything to growers at once. Unless, however, there are very definite and somewhat pressing uses in the business for such reserves, growers usually insist on having them distributed.

The larger co-operative associations will need to carry on more and better research if they are to have the best possible information for their growers. Some are already doing this. Too many times, however, the management itself has erred in sizing up a situation.

A promising line of action not yet widely adopted is that of co-operation with the bankers. The manager of the raisin association has definitely urged the banking interest of his community to be cautious in their lending for any further expansion of raisin production, urging them to lend only where they are satisfied that the land is particularly suited to grape production. The manager of the walnut association did something of the same sort when he sent to practically every banker in the state a copy of an annual report in which he tersely sized up the situation. It would seem that working with the bankers in this way should be particularly effective. Here again we come to the question of where to draw the line. If the banker is to be economic adviser, and is to tell the farmer what he is to produce, he, too, must know more—much more than the typical country banker of today knows about price prospects.

It may be pertinent to ask at this point why co-operative associations have not done more along this line. One of the reasons is to be found in the relationship between grower and management. This relationship is of such a nature as to make rather difficult any striking influence on production. In the first place, the members of an association are ordinarily the real bosses, and most of them feel that a co-operative marketing association's work begins when the commodity has been produced. Few managers have a sufficient hold on growers to make possible an influence which reaches back to the production end of the business. Furthermore, most managers are busy enough with the marketing job without trying to interfere in the members' production programs.

Even when a manager has his members well in hand he has no control over or influence with non-members who are growers or potential growers. Non-members have on numerous occasions received higher net returns than have members and to that extent any influence which price has on production is accentuated outside of the association.

Then, again, pessimism is never popular and managers often feel that they must be optimistic. Hence they are inclined to stress the need of having an organization and to use impending increases in production as arguments for closer co-operation rather than to urge the growers to take the matter to heart individually and decrease production. They can thus color their pessimism with a note of optimism.

Perhaps as important a reason as any why our co-operative managers have not been more active in attempts to bring about adjustments in production, which in most cases would mean curtailed production, has been the fear of anti-trust laws. The management has known that curtailment of production was frowned upon as an activity obviously designed to enhance price. It has also known that proceedings under anti-trust acts would hit management first of all. Hence if anything were done it must come from the growers themselves rather than from the management. I might mention here the old consent decree in which the Department of Justice forbade the Sun-Maid Raisin Growers to curtail production.[3]

Recent discussions of business cycles by men high in government circles indicate a conviction that it is wise to eliminate these cycles in business and give grounds for the belief that the same idea can be brought to agriculture without invoking the operation of anti-trust laws. In fact section five of the act creating the Division of Co-operative Marketing in the United States Department of Agriculture seems definitely to clear the way for action along this line when it authorizes those to whom it applies to ". . . . . acquire, exchange, interpret, and disseminate past, present, and prospective crop, market, statistical, economic, and other similar information by direct exchange between such persons, and/or such associations or federations thereof, and/or by and through a common agent created or selected by them." [4]

The nature of the farm business itself has a bearing on the unwillingness of members to submit voluntarily to any outside influence on the volume of production. Most important is, of course, the fact that each farm is a business

[3] Howard, Fred K. History of the Sun-Main Raisin Growers, p. 42.
[4] Sec. 5, Public 450, 69th Congress. H. R. 7893.

unit in which the independent judgment of the individual operator determines matters of expansion or curtailment. Along with this is the fact that the farm business involves a high percentage of fixed expense. Even family labor is often in the nature of a fixed expense in that little of it can ordinarily be used in other ways if farm activities are curtailed so as not fully to use it.

Then again, there is the human nature aspect of the problem. The individual operator may realize that adjustment is desirable. He sees as clearly, however, that if others do as they are advised he had better do as he pleases.

The types of influence I have thus far discussed deal with attempts to make adjustments in the cyclical movements of production. They look to future production. Another phase has necessarily been attacked by entirely different methods. I refer to those adjustments between production and market demands which must be made to take care of the product of the peaks of production cycles and of those surpluses which arise from annual variations in yields. Here the only possible action is one which makes adjustment after production has been completed at least to the point of readiness for harvest.

Definite action is being undertaken with at least nine California products. They are: lemons, oranges, walnuts, almonds, raisins, rice, milk, eggs and berries. Two somewhat different types of remedy are being used. They are (1) conversion into non-competing products, and (2) sale of surplus on outside markets, domestic or foreign. I might have added a third, namely, carrying a surplus to a season of shortage. The latter, however, has been practiced only as a result of necessity, usually when the naming of too high a price has resulted in a carry-over. An exception to this last statement is the storing of eggs each spring for sale later in the year. The lemon distribution plan also involves a measure of time distribution, since lemons are held in storage for varying lengths of time in order to make minor adjustments in the marketings.

Going back to conversion into non-competing products, most of you doubtless know that the citrus growers have organized lemon and orange products companies. Doubt-

less you also know of the fact that the walnut and almond growers are devoting a great deal of attention to the preparation of nut meats from the lower grades of nuts, and of the fact that the raisin growers have erected an enormous by-products plant known as a "syrup plant." A berry growers' association has induced the jobbers to sign an agreement not to cut prices below a stated minimum. Any berries left on jobbers' hands after nine o'clock are sent to a cannery for the account of the association. Other illustrations are the manufacture of surplus fluid milk into various milk products, and the breaking and drying of eggs.

The result of this line of action amounts to taking a portion of the supply off a glutted market and putting it into an entirely different though usually related market. For example, the cracking of nuts takes the lower grades completely off the holiday market and puts them into a market which is open all year. Similarly, the berry growers' action relieves a glutted market and taps an all-year market. In the case of some types of berries the diversions to the cannery are made directly from the farms. That is, berries from certain sections are picked for the canneries under instructions from the association when market prospects are bad. The result is that a cheaper method of picking and handling can be used and the lower cannery price actually made moderately profitable.

In the case of lemons, the handling of the surplus has been worked out in considerable detail in connection with a distribution plan. Ordinarily Exchange shipments are regulated entirely by the offerings of individual locals. During the past few years, however, there has been a decided surplus of lemons. As a matter of necessity, therefore, arrangements were made in 1925 for a distribution committee to be made up of the managers of the district exchanges and the sales managers of the central association. At the weekly meetings of this committee the market outlook is discussed, and an agreement is reached as to approximately the quantity which can be marketed profitably in the various markets during the following week. This quantity is then prorated to the various district exchanges on the basis of storage holdings on the first and fifteenth of

each month. The result of the operation of the plan is that each local association tends to pick and put into storage every bit of fruit that is likely to pass inspection so as to have as big a base as possible on each base period, and then sends to the products plant such portions of the lower grades as are left after the weekly prorate is made.

Most of the local houses are members of the lemon products company and send their surplus lemons in bulk directly from the local houses to the products plant for manufacture into citric acid and other products. In the face of an enormous crop in 1925 this plan resulted in stabilizing lemon prices when association officials claim there would otherwise have been demoralized markets. To do this, however, it was necessary to send to the products plant approximately 25 per cent of the crop. [5]

The second method, that of selling the surplus on outside markets, domestic or foreign, has been used in a number of instances. Practically every surplus period, and there have been many in the upward climb of production of most California products, has resulted in redoubled efforts to expand domestic markets. This may have looked bad to growers in those years, but expanded markets usually develop into more or less permanent markets, so that each surplus has made it possible to start from a new high point the next year.

In at least two cases a definite effort has been made to reach into foreign markets. I refer to raisins and rice. The raisin people, of course, are trying to build up foreign markets as a permanent program. In the case of rice, however, the use of the foreign market has thus far been more largely a surplus handling scheme. It so happens that the type of rice grown in California is the type used in Japan. The Japanese rice market is a large one and the total California crop of rice is usually less than 1 per cent of the Japanese crop. Obviously, therefore, a small surplus even though it runs to over a million bags, as it will this year, is only about one-third of 1 per cent of the Japanese crop. It is believed that this year the sale of a portion of the rice crop in Japan will net a substantially higher figure than

[5] Address of Mr. C. C. Teague before the State Fruit Growers' and Farmers' Convention, Fullerton, California, November 10, 1926.

would have been obtained had the entire crop been sold in the usual markets for California rice, and that it will prevent a serious break in the domestic market.

The various schemes for disposing of a surplus have, however, a serious limitation in so far as the taking of a loss on the surplus improves the market for the rest of the crop. The outside grower takes none of the losses on the surplus if there are any, bears none of the costs of processing, and gets the full benefit of any beneficial influence on the market. This sets up a strong pull away from the organization.[6] The lemon plan is already feeling the strain of this pull. In the address above quoted the president of the California Fruit Growers' Exchange states that while the plan has "manifestly been a great success, the experiment is not yet completed. It yet remains to be demonstrated whether or not the Exchange growers will remain loyal and continue to support the agreement or whether they will listen to the seductive pleadings of the outside shippers . . . ." The association growers have been told that they need not prorate shipments but can ship all of their fruit onto a stabilized market if they will withdraw from the Exchange and sell through independent shippers.

Mr. Teague continues with the statement that "while this siren song of the outsider sounds good, it won't work; if any considerable number of Exchange shippers withdraw the agreement will be abandoned and we will go back to the old game of unrestricted shipments and the survival of the fittest."

To summarize, I might say that a few of the larger California associations are urging directly and through bankers the curtailment of planting in the cases of certain fruits in order to avoid serious over-production; that such influence is limited because of the relationship between management and growers, and because of the nature of the farm business.

When over-production is an actual fact, adjustments are being made in a number of cases by conversion into non-competing products and by sale on outside markets.

[6] This applies to any general benefits which cooperative marketing brings to an industry. The most thorough-going scheme yet proposed for overcoming this difficulty is the compulsory pooling of Queensland, Australia. A compulsory pool is established when at least 75 per cent or more of the producers of any given farm product *who vote on the matter* are in favor of such a pool.

SOME LONG-TIME EFFECTS OF COOPERATIVE MARKETING [1]

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Cooperative marketing is an established force in the merchandising of farm products. The farmers who have tried it are so generally enthusiastic over its effectiveness that they urge its wide-spread adoption. Investigating Committees, from the Joint Commission of Agricultural Inquiry of the Congress, to the National Industrial Conference Board, urge it as one of the principal channels of relief from the agricultural depression. Legislators, and the President of the United States, stand ready to aid it in many ways. In appraisal of this favorable comment on cooperative marketing it is interesting and instructive to review some of the accomplishments of two well-known cooperatives during the past fifteen or twenty-five years.

It is generally conceded that the California Fruit Growers' Exchange and the California Walnut Growers' Association are efficient merchandising organizations. Marketing costs per unit of sales are low; standardization of products has been carried to a nice point; the market has been greatly broadened and the season of use materially extended for both products; the advertising has been both artful and virile. All of this is understood and admitted by those who have followed agricultural marketing.

It is equally patent to one who has watched the development of the orange and walnut areas in southern California during the past twenty-five years that large stretches have been reclaimed from semi-desert to fruitful orchard, that comfortable —even luxurious—homes have been built out of the proceeds, that an atmosphere of prime of living has replaced the rigor of pioneering. These things are obvious and admitted—but what of the future? Is cooperative marketing the sort of magic that can indefinitely increase, or even maintain, the prosperity of an expanding industry? The late Hon. Henry Wallace once said that "some day these California orchardists

[1] This paper was read at the seventeenth annual meeting of the American Farm Economic Association held at St. Louis, December 29, 1926.

must come to a policy of restricting acreage, unless they come to an end of their prosperity." Was he right and, if so, when will the time come? Or will the forces of competition restrict expansion without any conscious effort on the part of the orchardists? What are the facts in the developments to date?

Let us look first at the case of walnuts. Sales values of bearing orchards may be considered a rough indication of their capitalized net earning power, although it is true that the rate of capitalization may change with the years and hoped-for earnings may play an important part, especially during rising prosperity. Even with these qualifications, sales values are a useful indication of the attitude of mind of informed people towards the industry.

In Table 1, sales values of bearing walnut orchards are reported by five-year intervals from 1900 to 1925. These figures are derived from two sources—first, the estimate of one hundred fifty orchardists all of whom have been growing walnuts since 1910, and nearly all since 1900 or earlier; and, second, a much smaller number of actual sales known by the writer personally to be representative of different communities within the walnut area. The figures reported are an average of the two series, which were almost identical.

TABLE 1

Walnut Orchard Land Values

Year	1 Sales value per acre	2 Converted to 1913 Dollar	3 Relative to other Calif. Farms
1900	$600	$800	100%
1905	680	820	--
1910	800	845	64
1915	1,300	1,210	--
1920	2,300	1,200	91
1925	2,350	1,425	--

These figures have been converted, in column 2, to a constant-value dollar basis through the use of Snyder's index of general prices. However, in applying the index, a three-year average of the index numbers has been used rather than the specific year of the estimated land values because it was felt that, especially during the war period, land values responded less violently in individual years than did general prices. The only material change from this method of averaging as against

the use of specific years is in 1920, when the converted value would have been lower if the 1920 index number had been used alone. Snyder's index was used at this point in preference to any other because it is the most general measure available of the changes in the value of the dollar. At other points in this study, special indices are used for specific comparisons but wherever a general comparison with a constant-value dollar is desired, Snyder's index has been used.

The deflated land values show a very moderate rise from 1900 through 1905 to 1910. Then between 1910 and 1915 the rise is abrupt. From 1915 to 1925 the rise continues, although temporarily checked in 1920 when general prices were so high. It seems probable that this check in 1920 was but an indication that land prices move more slowly than do general prices in times of violent price change. It is to be noted that the actual dollar increase in orchard value was at its maximum at that time. The California Walnut Growers' Association was formed in 1912 as a sales agency for a federation of local cooperatives. Intensive sales efforts were undertaken in that and subsequent years.

During these twenty-five years intensive development of agriculture has taken place in many parts of California. As a result, the value of farm land has increased throughout the state. The census figures for the value of farm lands generally in California indicate that walnut orchards have not increased in value as rapidly as has the average per acre value of farms in the state. This difference in the rate of increase in value is probably explained by the fact that the value of general farm land reflects little else—on the cost side—than the scarcity of the single factor, land. The cost of orchards, on the other hand, is a combination of scarcity of land with the labor involved in growing the trees. This labor cost has not increased at the same rate as has land scarcity. The comparison may have no direct bearing, therefore, on the effectiveness of the California Walnut Growers' Association in selling their products but it does form an interesting contrast to a similar comparison between orange orchard value and general farm value, which will appear presently.

Where have the returns come from to justify the increasing orchard valuations? Table 2 gives, in column 1, the season's

price of walnuts, f. o. b. California, by five-year periods, beginning with 1910. In each case the price quoted is a three-year average, centered at the five-year point. The average is used to show the general trend of price movement, with a partial discounting of specific and unusual supply and demand factors of any individual year. These prices have been reduced to a constant-dollar level by the use of the Bureau of Labor index of wholesale food prices. (Column 2.) The Bureau of Labor index was used in this case because the walnut prices are definitely wholesale food prices and as such they are subject to the influences which affect this particular index. The resulting figures show that the wholesale price of walnuts has advanced more rapidly than the wholesale price of foods in general. The intensive sales activity of the cooperative has resulted in an increase in consumer demand schedule which has been more rapid than the increase in supply, with a resulting increase in price. This increase in price is in part responsible for the increased returns to the grower out of which has grown the rising valuation of orchard land.

TABLE 2

Year	F. O. B. California Walnut Prices 1 Per pound	2 Converted to 1913 dollar
1910	12 cents	12.35 cents
1915	15.1	13.6
1920	26.1	13.8
1925	23.6	15.0

That there has been a real change in the demand situation is further indicated by the production figures for this period during which prices rose relative to other food stuffs. Table 3 shows the production of California walnuts by five-year periods from 1900 to 1925 and also the total of California production and imports from 1905 to 1925. Here, again, three-year averages are used to represent the five-year intervals so that any unusual single-year change may be less conspicuous.

The increase in California production from 1900 to 1910 was 400 tons per year; from 1910 to 1920 was 1,200 tons per year; from 1915 to 1925 was 1,400 tons per year; while the increase in total U. S. consumption, California crop and imports, from 1905 to 1915 was 700 tons per year, and from 1915 to 1925 was 1,600 tons per year. There has been a falling off

TABLE 3

Production of California Walnuts and imports into U. S. A.

Year	Calif. crop in tons	Total tons including imports
1900	6,000	----
1905	7,000	18,000
1910	10,000	22,000
1915	14,000	25,000
1920	22,000	34,000
1925	28,000	41,000

in rate of increase, both of the California crop and the total consumption since 1920, but as there is still a large non-bearing acreage of young trees in California, the total production will doubtless continue to increase for some years. The question which naturally arises is whether demand manipulation can keep pace with this increased production?

The California Fruit Growers' Exchange has a longer history back of it and its experiences may be helpful in suggesting the final lengths to which such sales organizations may go. The California Fruit Growers' Exchange was organized under its present name in 1905, although some federated selling by cooperatives had commenced about ten years earlier. It is probably fair to say that intensive sales efforts by cooperatives began ten to twelve years earlier with oranges than with walnuts.

Table 4 presents data for orange orchards during the Exchange period similar to that for walnuts given in Table 1. These data were gathered in the same way as were those reported for walnuts.

TABLE 4

Orange Orchard Land Values

Year	1 Sales value	2 Converted to 1913 dollar	3 Relative to to other Calif. farms
1900	$900	$1,200	100%
1905	1,100	1,325	--
1910	1,500	1,550	80
1915	1,800	1,680	--
1920	2,500	1,300	66
1925	2,300	1,400	--

When the land values are converted to a constant-dollar value by the use of Snyder's index, some interesting contrasts are noticeable between their movements and those of walnut

orchard values. Orange orchard values increased 30 per cent between 1900 and 1910, while walnut orchards increased only 5 per cent. Orange orchards reach a peak in 1915—40 per cent above 1900—which has not since been approached, while the peak in the walnut orchard values is in the final year of the table—78 per cent above the 1900 value. Moreover, the value of orange orchards relative to other California farms is less in 1920 than the similar relation of walnut orchards to other farms.

From these data it appears that the California Fruit Growers Exchange was able to increase growers' net return per acre for about fifteen years, after which time a further incease—or even the maintenance of status quo, has been impossible. If such a time limit should operate in the case of the Walnut Growers' Association a stationary or falling orchard value would appear within the next five years. The fact that it takes from two to five years longer to bring new walnut plantings into bearing than is necessary with oranges may be expected to delay the full effect of an increased supply by that much.

For many years the California Fruit Growers' Exchange has maintained dealer service activities in connection with their aggressive merchandising. Through the contacts thus made, they have collected data on consumer prices and dealer margins for a number of leading markets and for all seasons of the year. These data have been published from time to time and form the basis for a study of consumers' prices and dealers' margins such as is available for but few industries. Moreover, the California Citrus Protective League and the Citrus Experiment Station of the University of California have both collected and published comparative figures on cost of production, harvesting, packing and marketing oranges at approximately five-year intervals, or oftener, beginning with 1910. These sources have all been utilized in the analysis of prices and costs which follows. The writer was intimately acquainted with the methods used in the gathering of these data and believes that they fairly represent the facts as they existed at the various dates.

The three-year average consumer's price paid for oranges at five-year intervals are given in Table 5. Since these are retail food prices, they have been converted to a constant-dollar

value by the use of the Bureau of Labor's index of retail food prices in the United States.

TABLE 5
Orange Prices—Paid by Consumer

Year	Price per box	Converted to 1913 dollar
1910	$4.50	$4.90
1915	5.00	4.90
1920	7.85	4.35
1925	7.50	4.90

As may be seen from the table, the retail price of oranges has varied exactly with the average retail price of food since 1910, except that it did not rise so high as the average during the post war years of unusual prices. While orange orchard values continued to increase until 1915, there was no increase in consumer price of fruit between 1910 and 1915. The 1915 land value may have been in anticipation of increased earnings which never were realized; in fact, the net returns which will be reported later suggest this to be the case.

Table 6 reports the three-year average production of California oranges at five-year intervals, together with the total United States consumption. The falling off in the increase of California production and of total consumption of oranges commenced at least five years earlier than with walnuts. The last five-year period showed an increase of over 20 per cent in the consumption of walnuts against 7 per cent for oranges. In other words, after twenty-five years of intensive sales effort a point of approximate stability seems to have been reached. The writer has previously published data purporting to show that the cost of developing orange orchards was just equal to their capitalized earning power in 1920-22, when unplanted land was priced at its capitalized earnings in production of annual crops.

TABLE 6
Production of California Oranges and Total United States Consumption

Year	California Production in millions of boxes	Total U. S. Consumption in millions of boxes
1900	6.0	6.2
1905	10.0	11.2
1910	14.0	18.8
1915	16.0	23.0
1920	18.0	26.6
1925	19.0	28.5

There are many activities undertaken by cooperative sales organization besides the development of new markets. The effectiveness of some of these undertakings should be measureable in comparative costs before and after the institution of the new regime. For instance, the California Fruit Growers' Exchange has, as a subsidiary, a Supply Company which is reported to have made marked savings for members through the purchase of orchard and packing house supplies such as fertilizers, cyanid, box shook, wrapping paper, and so on. Moreover, they have been influential in standardizing packing house layout and equipment. Table 7 shows the average cultural, or orchard, costs of producing oranges (column 1), and, in column 3, the average costs of picking and packing, at five-year intervals. In each of these enterprises, wages and materials about equally divide the costs. Consequently, in reducing the actual figures to a constant-dollar basis, a simple average has been used between the Bureau of Labor index of the wholesale price of materials and Douglas' index of annual earnings of all wage earners. When the actual costs are deflated in this way, it appears that orchard costs have been reduced by 2 per cent and packing costs by 7 per cent in fifteen years. This comparison shows the extent to which the California growers have been able to increase their effectiveness relative to industry in general. The improvement has come either through better bargaining for labor and materials or through better and more standardized management. If the saving has been any greater than indicated by the percentage figures just given, then it must have been offset by the higher costs of production on the new lands that have been devoted recently to orange culture. It is of interest to note, in passing, that the large increase in production already referred to appears to have taken place at constant or decreasing cost per unit of output.

TABLE 7

Orchard and Packing House Costs California Oranges Per Box

	1	2	3	4
	Orchard Costs		Packing Costs	
Year	Actual	Deflated	Actual	Deflated
1910 ----------	$0.86	$0.91	$0.402	$0.43
1915 ----------	0.96	0.90	0.432	0.41
1920 ----------	1.60	0.85	0.737	0.37
1925 ----------	1.60	0.89	0.728	0.40

One of the activities which has been suggested as a particularly fruitful one for cooperative marketing organizations is the bargaining with railroads, through the Interstate Commerce Commission, for freight rates favorable to farmers. The California Fruit Growers' Exchange has expended no small amount of energy in attempts to favorably influence freight rates. The Lemon Rate Case was finally settled in favor of the growers and substantial refunds resulted. The Exchange conducted a vigorous protest against the flat percentage increases in post-war rates, claiming that they were unfair to an industry in which transportation was already so high a part of delivered costs. In Table 8 the freight rates on oranges are compared at five-year intervals with an index of average freight charges per ton mile in the United States. On the basis of this comparison, the orange rate is relatively the same in 1925 as it was in 1910, although it was higher both in 1915 and 1920. The Cooperative seems to have been no more successful in bargaining for freight rates than have other shippers.

TABLE 8

Transportation Costs of California Oranges Per Box

Year	Actual	Relative to other shippers
1910	$0.907	100
1915	0.954	102
1920	1.70	115
1925	1.33	100

Data on merchants selling costs are not available prior to the three-year average centered at 1915. Table 9 reports the exchange charges jobber's margin and retailer's margin per box at five-year intervals. The total selling costs have been changed to a constant-dollar basis by the use of Snyder's general price index. The dealer service work among merchants, together with the increase in volume of sales seems to have lowered the per box cost of selling oranges when compared with prices of commodities and services in general.

One of the final tests of efficiency of a marketing organization is found in the net returns paid to producers. Data on net returns to orange growers are available; from the f. o. b. sales value of the fruit, the selling, packing and cultural charges have been deducted, leaving the returns to the en-

TABLE 9

Selling Costs of California Oranges Per Box

Year	Exchange Charges	Jobber's Margain	Retailer's Margin	Total	Converted to 1913 Dollar
1910	$0.07	----	----	----	----
1915	0.066	$0.45	$1.45	$1.97	$1.84
1920	0.092	0.63	2.08	2.80	1.46
1925	0.120	0.60	2.10	2.82	1.71

trepreneur after all expenses are paid but allowing nothing for rent or interest. The actual figures are given in dollars per acre in Table 10 and these are converted to a constant dollar by the use of Snyder's index. The deflated returns reached a maximum in 1915, since when there has been a 5 per cent reduction. The uniformity of the figures is truly a matter of remark, as was also the case with the figures on consumers' prices reported earlier; for fifteen years the consumer price of oranges has moved precisely with the price of foodstuffs in general, and the net returns per acre have moved precisely with the average price movements of goods and services.

TABLE 10

Grower's Net Returns Per Acre for California Oranges

Year	Actual	Converted to 1913 dollar
1910	$110	$115
1915	125	117
1920	218	113
1925	185	112

The facts that have been submitted above suggest one of two conclusions; either, first, the expansion of the orange industry has taken place at constant cost in all particulars, or, second, the savings that have resulted from better organization of the buying and selling markets have just been offset by the increased costs attendent on the use of poorer land. The three-year average yields of oranges per acre, centered at each five-year date, have varied only between 148 and 154 boxes and are without a trend in direction, so that any increasing costs are not due to lower yields but are confined to increasing use of fertilizer, additional requirements for pest control or frost protection, or some other cultural process made necessary by the new location. That poorer lands, in the above sense, have

been devoted to orange culture during the past twenty years is patent to one familiar with the industry. The astonishing thing is the cost of production, relative to other things, has not been increased beyond the power of cooperation to offset.

One other comment may be made on the data reported. The accuracy with which sales values represent earning power of farm land is often called in question. The net returns given in Table 10 may be converted to an interest rate on the sales values reported in Table 4. The following rates of capitalization result:

1910	7.3%
1915	7.0
1920	8.7
1925	8.0

From these figures it would appear that in 1915 growers were looking forward to a further increase in earnings and therefore were content with a relatively low rate of return for the moment, while in 1920 the unusually high money prices of commodities in general were discounted in the exchange value of land.

On the whole, the orange industry seems to have responded to aggressive selling of its product much as theoretical economics would suggest. First, there came an increase in demand schedule which was more rapid than the increase in supply. This resulted in better returns to the growers and higher capitalization of orchards. More land was brought into orchard, with probably some increase in cost, which just offset the savings in efficient marketing. Subsequently, when the new plantings came into bearing, demand no longer increased more rapidly than supply; anticipated inflation of land value was no longer written into orchard sales prices; opportunity costs of bringing orchards into bearing were equal to their capitalized earnings; rapid expansion of acreage gave way to a rate about equal to the growth of population. The spectacular accomplishments of the California Fruit Growers' Exchange are finished. From now on they are in competition with industrial and corporate distributors of foods on a national scale, in a market already well stocked with fruit. The Exchange has pioneered in merchandising and has been highly instrumental in the development of orange production but from now

on there is every indication that its growth will be greatly moderated. Cooperative marketing may hope to go this far, if as efficiently managed, in any poorly organized industry; no selling machinery can hope to go much further.

Up to the present time the landlord has reaped the benefits of the system, for the consumer's dollar is buying just the same quantity of oranges in relation to other foods as has long been the case; labor has not received any larger portion of the consumer's expenditure, nor has the merchant, nor the dealer in orchard and packing house supplies. But land has been converted from other less profitable uses to orchards—and to the landlord has gone the spoils! It seems, however, that the late Secretary Wallace was wrong in his suggestion that the growers would some day be forced to restrict expansion. Economic forces have limited plantings without any conscious action on the part of growers, and at a point where reasonable returns may still be expected.

At one point, however, the consumer has definitely benefited. One of the strongest raison d'etre for agricultural cooperation is their activity in standardizing their products. This function has been performed to a notable degree both by the Walnut Growers and by the Orange Growers. While prices do not reflect any advantage to consumers, the improvement in quality surely does, and in the orange case, at least, the improvement has come without any increased charge to the consumer. Not only is there better grading, which assures a standardized product, but there is more careful handling by the packers and shippers and better storage by the merchants. To this extent, then, there has already been a sharing of advantages with the consumers and as competition with other foods, especially fruits, develops it is probable that other concessions must be made. These can only come from a further increase in the efficiency of the organization or from a reduction in the returns to the landlord.

SOME OBSERVATIONS ON THE SO-CALLED AGRICULTURAL LADDER [1]

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Much has been said and written in recent years on the feasibility of an average individual starting empty-handed and achieving, during his working life, the full ownership of an average American farm. The so-called agricultural ladder is the different tenure stages which such an average individual passes through, or over, on his way up to full ownership of a farm. If this individual lives with a farmer father and works for him as a non-wage earner through most of all of his teen years, then becomes a hired man either to his father or to some other farmer, then a tenant farmer, and then an encumbered farm owner, or an unencumbered farm owner, he is said to have climbed the agricultural ladder without skipping any of the stages or rungs on that ladder.[2]

It is the purpose of the writer, in this paper, to call attention to what seem to him to be some of the unwarranted conclusions and inferences in the writings and the researches of students on rural problems, particularly as these writings and researches pertain to this so-called agricultural ladder and farmers' relations to it.

There seems to be almost an unanimity of opinion among agricultural economic and farm management specialists that American farmers now make their first payments on farms, or acquire ownership of farms, at a more advanced age than did American farmers of past decades. The following quotations are fair samples of such conclusions and inferences:

Gray and Others, 1923 Yearbook, U. S. Department of Agriculture (p. 539): "In general, the greatest difficulty in acquiring a farm is in securing a sum sufficient for the initial payment, and it is sometimes argued that the higher valuation of farm real estate compels the farmer to accumulate a larger

[1] This paper was read at the seventeenth annual meeting of the American Farm Economic Association held at St. Louis, December 30, 1926.

[2] Perhaps two sub-rungs on this agricultural ladder should also be mentioned. These are the cropper rung or tenure stage, which is important only in the southern states, and the part-owner rung or stage; the former being a sort of cross between a hired man and a tenant, and the latter a combination owner-tenant farmer.

sum for the initial payment, thus forcing him to remain a longer time as a tenant before attempting to buy a farm."[3]

Taylor & Zimmerman, North Carolina State Tenancy Commission, Bul. (pp. 36 and 39): "A few generations ago a landowner practically always gained ownership by climbing the agricultural ladder. The ascent was easy in those days because of the low price of land. The climb has become more and more difficult as the prices of land have increased. . . . Land is higher priced now than then and it will therefore take the present landless men longer to accumulate enough capital to make the initial payment on a farm."

Lloyd, Iowa State College, Bul. 159,[4] (p. 171): "Now (1915) an average farm sells for nearly five times the price of an average farm 25 years ago. . . . Hence the age of ownership today is about six years later in life than it was 25 years ago. Farmers make their first payment on land now at the age of 34, while 25 years ago ownership was obtained at 28 years of age."

Holmes, Iowa State College, Bul. 214,[5] (pp. 326-327): "In 1880 the average investment per farm in Iowa was $3,893. In 1910 it was $17,259 and in 1920, $39,942. This rising valuation has acted as a growing barrier to land ownership by operators. It has lengthened the period of tenancy and in the case of many tenants has definitely removed the hope of ownership. . . . Were it not for the importance of inheritance in maintaining a land owning class of farmers, the percentage of tenancy would be much higher."

Spillman, The Agricultural Ladder, American Economic Review, Supplement, March, 1919 (p. 176): "The price of land has been increasing at a rapid rate in recent decades. As a result, the length of time a man must spend in the stages of hired man and tenant is increasing."

The writer contended as early as 1915, when he read, in manuscript form, Professor Lloyd's bulletin from which the quotation cited above has been taken, that the survey findings of these experts, and on which they base their assertions that

[3] It is only fair to state that these writers question the verity of this statement later in their study.
[4] Farm leases in Iowa.
[5] Relation of Types of Tenancy to Types of Farming in Iowa.

the average age of men who at present acquire their first ownership of farms is greater than the average age of men who acquired similar ownership a few decades ago, are either not reliable or have been incorrectly analyzed. To test the verity of these different contentions the writer and his assistants secured data, in an Iowa rural social survey[6] of 400 farms made in 1920, on both the date of birth and the age at the time of first acquisition of farms from the 255 farm owner operators in this area. The age at the time of the second purchase of farm land was also secured for the 91 owner operators who had made such purchases. The information so secured made it possible to classify these farmers and the facts connected with their acquisition of farms on two bases: (1) On the basis of decades in which these farm owners were born together with their average age at the time of their first acquisition of farm ownership; and (2) on the basis of decades in which they first acquired farm ownership and their average age at the time of such acquisition. Since the same farmers are involved in both classifications, the two classifications should serve as partial checks upon each other. The facts are shown in the tables.

THE AVERAGE AGE OF FARMERS AT THE TIME OF THEIR FIRST ACQUISITION OF FARMS AND THE ACQUISITION OF FIRST ADDITIONAL LAND IN RELATION TO THE DECADE IN WHICH THESE FARMERS WERE BORN

Decade in which farmer was born	First Ownership of Land			Acquisition of First Additional Land		
	No. of farmers	Average age of farmer (years)	Average number of acres acquired	No. of farmers	Average age of farmer (years)	Average number of acres acquired
1840-49	3	31.0	117	2	33.0	90
1850-59	32	34.3	125	14	44.0	121
1860-69	56	33.8	134	27	42.5	93
1870-79	80	32.4	126	32	38.8	99
1880-89	52	30.3	136	13	32.8	104
1890-99	18	25.9	146	3	27.3	103
Total	241[7]			91		
Average		32.0	131		39.3	90

Certain facts pertaining to the tables may now be noted. First, not all the essential data necessary to determine whether or not men do buy farms later or earlier in life now than formerly are contained in these tables for the reason that data were secured only on present owner operators and resident

[6] The Social Aspects of Rural Life and Farm Tenancy, Iowa State College Bul. 217. The facts were not published in this bulletin in the form in which they are shown in the tables.

THE AVERAGE AGE OF FARMERS AT THE TIME OF THEIR FIRST ACQUISITION OF FARMS AND THE ACQUISITION OF FIRST ADDITIONAL LAND IN RELATON TO THE DECADES IN WHICH THEY ACQUIRED FARMS

Decade in which farm was acquired	First Ownership of Land			Acquisition of of First Additional Land		
	No. of farmers	Average age of farmer (years)	Average number of acres acquired	No. of farmers	Average age of farmer (years)	Average number of acres acquired
1860-69	1	29.0	160	0	.0	0
1870-79	4	25.5	125	2	30.5	102
1880-89	20	26.6	116	3	31.3	38
1890-99	39	28.4	123	9	34.7	69
1900-09	73	32.6	133	27	36.9	93
1910-20	104	34.3	136	50	42.5	95
Total	241[1]			91		
Average		32.0	131		39.3	90

[1] Certain necessary data for placement in one or the other of the two tables were lacking on 14 of the farm owners. For this reason only 241 instead of the entire 255 farm owners are listed in the tables. Some of these 14 owners are old men who live on small acreages.

NOTE: A study showing results similar to those shown in the above tables is to be found in the 1923 United States Department of Agriculture Yearbook, p. 560.

landlords who are still active farmers in the area. No data were secured relative to the present absentee owners of the tenant farms. Neither have the factors of mortality, changes in longevity and size of acquisition been properly considered. This is, however, the method that has been followed by most of the agricultural economic and farm management specialists in the collecting of their data and on which they base their conclusions. That is to say, their data on acquisition of farm ownership pertain only to resident farm-owner operators and resident active-farmer landlords and do not take into consideration the factors of mortality, changes in longevity and acreage size of farms acquired. Second, the second table is the method of tabulation used by the agricultural economic and farm management specialists. Here the data are tabulated on the basis of decades in which these farmers acquired ownership of their farms. In the first table the farm purchasers are listed on the basis of the decades in which these purchasers were born. Third, since none of these farmers purchased farms before they were 20 years of age, the second table is slipped ahead two decades.

It will be noted further that the trends as to average age of the farmers at the time of both the first and the second purchases of farms in the two tables are exactly opposite. This calls for explanations. In these explanations, the writer believes, the major errors that have been made by these agricul-

tural economic and farm management experts will be made clear.

Attention has already been called to the fact that these tables do not contain all the essential data. This fact should be borne in mind along with the following explanations: In the first table the older purchasers, or slow climbers as they are sometimes designated, appear in relatively larger percentages in the earlier as compared with the later decades and therefore the average age of all farmers at the time of their first purchase of farms is greatest in the earlier decades of this table. This is shown by the different distribution of the purchasers in the two tables. But this fact becomes even more apparent when it is noted that in the last, or 1890-99, decade of the first table no purchaser of 30 or more years of age would be included. In fact, many purchasers might be less than 30 years of age and yet be excluded from this decade, since these data were collected in 1920, thus giving a range of purchasers in this decade of from 20 to 30 years of age. However, in the earlier decades both the old and the young purchasers would be included and the older purchasers would run up the average age of all purchasers unduly in these earlier as compared with the later decades. This is shown in the table. In the second table the reverse condition prevails. Here the old purchasers are eliminated in larger proportions in the earlier than in the later decades. That is to say, compulsory retirement from active farming due to old age or disability and removal by death would eliminate about all of the men who purchased farms comparatively late in life in the earlier decades and would leave there only men who purchased farms early in life. For example, if a purchaser was 40 years old at the time he purchased a farm in the 1870-79 decade, he would, in 1920, have been somewhere between 80 and 90 years of age. This undoubtedly accounts, in part at least, for only four farmers now being on these farms who acquired their first farm land in that decade. That most of these four farmers must have acquired their farms comparatively early in life is shown by their average age at the time of acquisition. On the other hand, it is apparent that relatively larger proportions of older purchasers would be left in the succeeding decades. It is at least con-

ceivable that this fact alone might account for the increase in average age of the farmers at the time of acquiring farms, as shown for the different decades in the second table. However, it is highly probable that data on the owners of the tenant farms, were they available, would contribute a cumulative factor toward such a correction.

The first of these two tables shows then that the method of tabulating data as shown in the second table and the usual conclusions deduced therefrom are not reliable. It does not show whether farmers now do or do not acquire ownership of farms earlier or later in life than did farmers of past decades. It has already been explained that other and additional data are necessary to establish the facts on that point.

Do farm hired men and farm tenants now serve longer apprenticeship periods in those tenure stages than formerly? Spillman answers yes and Saunders answers no. Spillman in his Agricultural Ladder[8] states that those hired men "who acquired their farms 31 to 40 years ago spent an average of 5.2 years as hired men. The length of this stage increases gradually until it becomes 7.9 years for the sub-group who acquired ownership during the decade ending with 1917. . . . For those tenants who acquired their farms 31 to 40 years ago, the length of the tenant stage averages 4.9 years. Three decades later it had increased to 11.1 years, an increase of 127 per cent." Saunders, in his Farm Ownership and Tenancy in the Black Prairie of Texas, U. S. Department of Agriculture Bulletin 1068 (p. 37), states that before 1889 it required farmers in his study, who are now tenant or owner operators, an average of 7.1 years to attain the tenant stage. In the decade 1889-99 this average time was 4.9 years, in the decade 1899-09, an average of 2.2 years was required, and in the decade 1910-19, an average of 1.3 years was required to reach the tenant stage. From his findings he concludes: "These data on share tenants are for men whose sole reliance in financial advance has been their earnings, and since they attained tenancy each decade in a shorter time and owned more wealth at the time of becoming tenants, it follows that ability to accumulate wealth has increased each decade, this increase, no doubt, being primarily due to an increased earning power."

[8] Page 177.

In these two citations we have similar errors which produce opposite results. Spillman's study eliminates the slow climbers, because of age limits, in his earlier periods in larger proportions than in his later periods. Saunders, on the other hand, eliminates the slow climbers in his later decades in largest proportions. In other words, Spillman's slow climbers are dead or have retired and therefore are not caught in his earlier figures, and Saunders' slow hired men climbers have not yet arrived in full numbers in his later decades, and therefore are not caught in his later tenant tenure stages. No doubt if properly weighed corrections were made in the different periods of these studies, the averages in each study would be far more nearly equal in both of them. As they stand they do not prove what these authors think they prove.

Another common error that is found in many rural economic and sociological research studies is a failure to recognize the fact that farm tenants comprise two rather distinct classes, the temporary and the permanent tenants. The temporary tenants are those who are on the way to ownership. This class is comprised largely of young farmers. The permanent tenants are those who, for one or more reasons, remain permanently in the tenant class. Obviously, the older tenant farmers tend to be grouped in this latter class in relatively large numbers. The average age of this group is undoubtedly above the average age of the temporary or transitory tenants. A relatively small percentage of these older permanent tenants, when included in averages of length of tenure, age, etc., of all tenants, weight these averages unduly as compared with similar averages for present farm owners who were once tenants. As a consequence, such comparisons are not reliable as bases for projecting the probable success of a large percentage of the present tenants as regards to future ownership of farms or other accomplishments, yet such comparisons and conclusions, or others very similar to them, are to be found in almost all rural economic and sociological research studies that have so far appeared. Often these comparisons even include all present owners on one side of the comparison irrespective of the previous tenure stages which they have passed through. The following quotation from the study of Taylor and Zimmerman

cited above is a fair sample of such non-reliable comparisons and loose reasoning. Speaking of croppers and tenants (p. 39), they state: "Both of these groups have passed the average age at which the present owners first attained ownership. Some of these men will undoubtedly some day become owners. The great majority of them never will unless they receive assistance from some source. Even those who will reach ownership will do so at a considerably later age than did the present group of owners. Land is higher priced now than then and it will therefore take the present landless men longer to accumulate enough capital to make the initial payment on a farm."

Do high land values defer ownership and therefore increase tenancy rates? A number of the experts already quoted in this paper seem to imply that high land values are about the sole cause of tenancy, and that the distinct reason is that it requires more years for the prospective buyer to accumulate the funds now necessary to make a first payment on his farm. Some experts state, and others imply, that higher tenancy rates prevail in those regions of the central west where high land values and high farm values prevail because it requires more years for the prospective buyer to accumulate enough funds to make his first payment on a farm in these regions than it requires in regions of lower land and farm values. Space and time will permit the writer merely to state certain facts and observations which very cogently challenge the verity of these tenets.

1. First there is the general observation that men to-day do not work as hard or as many hours per day as did their forefathers, yet they are enjoying a higher standard of living than did their forefathers. It is true, of course, that young families today begin on a higher level of living than did families of earlier decades, but the fact that they keep on raising their standard of living and pass on to the succeeding generation a still higher level seems to indicate that they are climbing the ladder of economic and social progress as fast as or probably faster than did families of earlier generations.

2. Gray and others, U. S. D. A. Yearbook, 1923 (p. 544), say: "For the United States as a whole the valuation of farm land, as measured by the purchasing power of money, was less in 1920 than in 1910."

3. Vol. V, 1920 Census (p. 354), shows the percentage of farmers in different age brackets for the 1920, 1910, 1900 and 1890 censuses as follows: Percentages of all farmers under 25 years of age 6.0, 6.6, 4.9 and 4.6. For all farmers 55 years and over the percentages were 24.8, 23.7, 25.9 and 26.2. For owner farmers only, the percentages were for those under 25, 2.3, 2.5, 2.1 and 2.3; for those 55 years and over, 32.7, 30.7, 32.7 and 32.7. For tenant farmers only, the percentages were, for those under 25, 12.0, 13.5, 9.9 and 9.1; for those 55 years and over, 12.5, 12.1, 13.5 and 13.7. Here it will be noted that from 1890 to 1910, inclusive, there is an appreciable trend toward younger farmers on the farms. The very slight upward trend in ages between 1910 and 1920 may be wholly or only partially due to the war drafts removing from the farms some of the younger farmers and leaving older farmers on the farms perhaps a few years longer than they would otherwise have remained there.

4. In Iowa—the state of highest farm values—in 1920 both owner and tenant farmers were younger than owner and tenant farmers of the United States as a whole; the average age of Iowa owners being, in 1920, 48.0 years as compared with 48.8 years for U. S. owners, and Iowa tenants 36.2 years as compared with 39.1 years for U. S. tenants. (1920 Census, Vol. V, p. 469.)

The writer is of the opinion that, in the central west at least, the ability of a farm wholly or largely to support two families, a retired farmer landlord family and a tenant family, and the factor of kinship between tenants and landlords possibly bear closer relationships to tenancy rates than does the supposed fact that it requires a longer time now for the tenant, as a prospective buyer, to accumulate the amount of a first payment on a farm. The writer believes further that there is a selective process going on on our farms which tends to bring the more efficient farmer and the more efficient, or more valuable, land together. It is probable that with the operation of such a combination of factors together with such other advantages as, for example, lower interest rates, such as prevailed in Iowa according to the 1920 census, in counties of highest land values, the climb to farm ownership will be made as quickly in regions

of high values as in regions of lower land and farm values. The fact, which has already been noted, that the youngest farmers in the United States are generally found in the regions of highest land and farm values seems, at least partially, to support these beliefs. But there are still other facts and observations which seem to support such beliefs.

1. In Iowa the acreage size of tenant operated farms exceeds that of owner operated farms.

2. In the first Iowa research study which the writer and his assistants began in 1914, and which was a study of an exceptional community (see Bul. 184, Iowa State College), it was found that approximately 50 per cent of the tenants were operating farms which were owned by near relatives. In a number of later studies which the writer has made in the state, of non-exceptional communities, it was found that the percentage of tenants who are related to their landlords, was, in some cases, over 50 per cent. The 1925 Federal Agricultural Census for Iowa shows that there are entire counties in the state where approximately 50 per cent of all tenants are near relatives of their landlords.

3. In his own Iowa studies the writer has found that high land and farm values and a high rate of kinship between tenants and landlords bear a rather close relation to each other.[9] Also, the 1925 Census just referred to shows that there are 27 counties in the state in which the percentage of both cash and share tenants who are related to their landlords is above the state average. In 19 of these counties farm land values are also above the state average of farm land values, while in the other eight counties the farm land values are below the state average.

4. In a 1923 Wisconsin study of 100 farmers who had retired from farms it was found that 26 of these men had succeeded either fathers or fathers-in-law when they began farming, while 47 of them had in turn been succeeded by sons or sons-in-law on the farms from which they retired.[10]

5. Yet another factor in farm tenancy rates is the homesteading possibility. So long as desirable farm land was read-

[9] See Iowa State College bulletins Nos. 184, 193, 217, 224 and 237.

[10] Larsen: Causes and Conditions of Retirement of 100 Retired Farmers Living in Mt. Horeb, Wisconsin (Mimeographed), Bureau of Agricultural Economics, 1926, U. S. Dept. of Agri.

ily accessible and available those young men who preferred to be farm owners on the frontier to being tenants in the home community became homestead owners rather than tenants. This left only such men as tenants as preferred being tenants in the home community to being homestead owners. Now that very desirable homesteading possibilities are largely exhausted or unavailable the former young homesteaders also become tenants in large numbers in the home community. Thus, present-day tenants comprise two classes, and rather distinct classes they are. It is quite likely that the class which represents the former homesteader comprises, for the most part, the temporary tenants. They, for the most part, will still become owners. It is also quite likely that the other class comprises a relatively larger percentage of men who will remain permanently as tenants.

These facts seem to indicate that the percentage of farm tenants who are sons or sons-in-law of their landlords is increasing rapidly, at least in the central west regions of high land values or high farm values, or both high land and high farm values, together with high percentages of German and Scandinavian farm populations. These men, though technically tenants, think of themselves largely as owners, and their attitude and relation to the organizations and institutions of their communities are much like those of owners, even like the best of the owners, it has been shown in a number of recent surveys. These men are technically tenants only until the time when they will inherit a part or all of the farms which they now severally occupy.

This factor of inheritance has, therefore, a variety of relations to farm tenancy. One such relation that will have increasing significance in the future is linked with the decreasing size of the farm family. As the farm family decreases in size, a relatively larger percentage of farm children will doubtless follow their parents on the farms. In fact, if the farm family once reaches the point of mere replacement reproduction then to the extent that farm men marry only farm women will these new farmers inherit and marry entire farms, or such equities as their parents hold in farms. Perhaps this will be the way the acquisition of American farms will work

itself out in the future. At any rate, the extent to which we move in the direction of smaller farm families will determine, in an increasing degree, the number of new farm families that will of necessity become and remain tenant families only during such periods as these new, or children's families, overlap the stay of their parents on the farm and parental farm ownership.

Two other points which the writer believes have a very important relation to this so-called agricultural ladder can only be mentioned. (1) Is age at first ownership of farms the best yardstick by which to measure rural progress? Is it a thing that should receive major emphasis? Is it not probable that deferred ownership, in some cases at least, if caused by extra time spent at acquiring additional education or capital, may not be advisable and actually hasten the date of complete and larger ownership? (2) Is it reasonable to expect an average farmer to achieve the unencumbered ownership of an average farm during his working life and at the same time enjoy, with his family, a standard of living that is comparable to that enjoyed by the average non-agricultural family? If this is an unreasonable expectation, and the writer believes it is, then there is something wrong with the system which expects the farmer to pay for an entire farm in one generation. This point alone suggests a number of lines of departure in emphasis on different aspects of American rural problems. If on the other hand the average farmer leaves an average farm as an unencumbered estate, he will score far above the average American as an accumulator of property.[11]

The points emphasized in this paper seem, upon first thought at least, to fall primarily within the field of economics, yet they project probabilities which have very great sociological significance. It is for this fact that the writer is primarily in-

[11] In one of his 1924 syndicated articles on thrift, S. W. Straus, President American Thrift Society, stated that "a recent examination of court records in a large eastern city showed that 89 per cent of all adults who died during the period under investigation left no estates at all; that more than 92 per cent left less than $1,000, and that more than 97 per cent left less than $10,000." Other studies show that 82 out of 100 men of all ages, when they die, leave no income producing estates; that only 18 of the 100 leave estates of $2,000 or more. On the other hand the average value of American farms, according to the 1920 United States Census, was, for land and buildings only, $10,284. The corresponding figure, according to the 1925 United States Agricultural Census, in the 36 states for which data are now available, was $9,906. Can the average farmer leave such a farm as an estate?

terested in and concerned with them. For example, if it is correct, as many of the authors quoted imply, or seem to imply, that the difficulties encountered in the acquisition of farm ownership are increasing out of proportion to the ability of the men at present on our farms to cope with them, then indeed is the sociological outlook for rural life in particular, and for social well-being in general, discouraging. If, on the other hand, the reverse condition is true, or more nearly true, then the future outlook for rural life, from the standpoint of the sociologist at least, is very encouraging. Thus, both the economist and the sociologist are justly interested in knowing which one of these tenets more accurately corresponds with the facts, and to just what degree it so corresponds with the facts.

The writer well knows that the factors to which he has called attention in this paper must be very carefully weighed when applied to measuring conditions in particular or restricted areas. These weightings cannot be properly enumerated and set out in this paper. The writer also does not claim that he has solved any of the great problems suggested by points which he has emphasized. That was not the object of this paper. The object of this paper was to point out that many of the conclusions and inferences regarding the so-called agricultural ladder, which have recently appeared in print and are often heard in public addresses, do not rest upon correct diagnosis of conditions and complete and accurate analysis of facts. The writer believes that he has suggested some points which prove that this is the case. He believes, too, that his paper contains at least some tacit suggestions for the prevention of the same or similar errors in future rural economic and rural sociological studies.

REPORT OF THE SEVENTEENTH ANNUAL MEETING OF THE AMERICAN FARM ECONOMIC ASSOCIATION AT ST. LOUIS, MO., DEC. 28-30, 1926

The Seventeenth Annual Meeting of the American Farm Economic Association was held in St. Louis at the Statler Hotel on December 28 to 30, 1926.

The meeting was called to order by President Carver at 10 a. m., December 28. The Secretary-Treasurer gave a brief report relating to the financial status of the Association. The following committees were appointed by the President. Nominations: E. G. Nourse, H. C. Taylor and I. G. Davis. Resolutions: H. C. M. Case, O. G. Lloyd and G. S. Wehrwein. Auditing: C. L. Stewart, Holbrook Working and J. T. Horner. The meeting adjourned.

The program was then carried out as printed. A second business meeting was held on Thursday following the luncheon. The report of the Secretary and Treasurer was given and referred to the Auditing Committee. The Nominating Committee made their report and the following officers were elected for the ensuing year: J. I. Falconer, President; O. B. Jesness, Vice-President; W. I. Myers, Secretary-Treasurer. The report of the Auditing Committee was read and accepted. The report of the Resolutions Committee was read and accepted. The report of the Committee on Research was read by Doctor Warren. Doctor Taylor spoke of the plans of the Social Science Research Council to make a study of research in the field of Agricultural Economics. Doctor Taylor moved that a Research Committee of five members be appointed to be comprised of J. I. Falconer, Chairman; Dr. G. F. Warren; Dir. Thomas Cooper and two other members to be appointed by the Chairman, this committee to cooperate with the Social Science Research Council. The motion was seconded and passed. The meeting then adjourned for the afternoon meeting. Copies of the reports of the Secretary and Treasurer, and of the Committee on Research are appended.

Attendance—

Tuesday morning	75
Tuesday afternoon	100
Tuesday evening	1,200
Wednesday morning	175
Wednesday afternoon	125
Thursday morning	300
Luncheon	90
Thursday afternoon	400

Following the sessions the Executive Committee met. The resignation of Doctor Nourse as Editor of the Journal was read. Mr. H. R. Tolley was selected to succeed Doctor Nourse as editor. It was voted to cooperate with the Michigan Agricultural College in the International Rural Life Conference to be held at Lansing, Michigan, this coming summer.

Report of Secretary-Treasurer

The report of the Secretary-Treasurer was read and approved in the following form:

Receipts—			
Cash on hand January 1, 1926		$465.82	
Dues	$2,898.49		
Book volumes	43.90		
Interest	3.50		
Reprints	6.75		
Advertising	25.00		
		2,977.64	
			$3,443.46
Paid Out, 1926—			
Printing Journal	$2,732.44		
Printing, miscellaneous	120.23		
Postage	98.63		
McAlpin Hotel (1925 meeting)	25.00		
Record book, and paper	20.34		
Journal: Purchase of back numbers	2.00		
Dr. Nourse's office for help	18.60		
Am. Econ. Assn. handbook	1.31		
			$3,018.55
Balance on hand December 23, 1926			$424.91
Unpaid bills: October, 1926, issue Journal			375.19
Net worth December 23, 1926			$49.72
Balance on hand December 23, 1926			$424.91
Check issued but not cashed, No. 50, to Ohio State University			14.00
Check issued but not cashed, No. 52, to I. M. Patterson			1.00
Bank balance December 23, 1926			$439.91

Membership—There were 822 paid up members in the Association on December 26, 1926, a net gain of 19 for the year. One hundred and sixty-six members dropped out during the year and 185 new members came in. The District of Columbia with 122 still leads, Illinois has 72, and New York 68. There are 67 members and subscribers in foreign countries.

The Journal—There were 504 pages issued in the Journal as contrasted with 456 in 1925. There were 144 pages in the issues of January and April, 128 in July and 88 in October. It cost approximately $4.40 per page to print the Journal during the year.

Income—The Association had a net balance of $49.72 on December 23, 1926, as contrasted with a deficit of $437.34 at the end of last year.

(Signed) J. I. FALCONER,
Secretary-Treasurer.

Report of the Committee on Research

Because the farmers were so much interested in having the economic phases, as well as the production phases of their problems studied; and because the women wished to have research in home economics, the Purnell bill was passed. In a number of institutions, there were on the ground, well-established departments in production fields and little or no work in these fields. The line of least resistance was to use the Purnell funds for production studies, and a large percentage of the funds have been so used. In other states, the funds have been used in accordance with the arguments used before Congress in order to get the bill passed.

According to a letter from W. H. Beal, of the Office of Experiment Stations, the Purnell Funds for the current fiscal year are to be used as follows:

Marketing of farm products		$216,000
Farm management	$80,000	
Cost of production	59,000	
Economics of production	49,000	
Total farm management		$188,000
Taxation, credit, land values, tenancy		$47,000
Miscellaneous economic studies		38,000
Rural social organization, and rural population		47,000
Total above subjects		$531,638
Total funds		$1,540,000

A little over one-third of the total Purnell appropriation is being used in these fields.

The character of the projects and the number of projects in each group are as follows:

Agricultural Economics	224
Rural Sociology	23
Home Economics	96
Production	347
Total	690

Over half of the projects deal with production and less than half with the new kinds of work. Apparently, considerably less than half the money is being spent in the newer kinds of work. The committee would like to raise the question as to whether the expenditures conform to the intent of the Act, and to the best interests of agriculture.

The committee had prepared a tentative extended report dealing with the methods of work and the like, but it finds that the Social Science Research Council has made available funds for an extensive study of this question and, therefore, recommends that this Association cooperate with the Social Science Research Council in making this study. Since it is expected that this study will go much further than the report of this committee could go, no further report is made at this time.

Signed:

W. J. SPILLMAN,
H. C. TAYLOR,
J. I. FALCONER,
O. G. LLOYD,
G. F. WARREN, *Chairman.*

Continuing the policy established last year, the plans for the Journal provide for the publication of a volume of approximately five hundred pages in 1927. The April, July and October issues will each contain 120 to 140 pages, if material worthy of publication is available. Members of the association and others are invited to submit manuscripts or suggestions for articles.

THE EDITORS.

REPORT OF THE ADVISORY COMMITTEE ON RESEARCH IN AGRICULTURAL ECONOMICS

I. Introduction

This Committee was appointed early in January, 1926, by the Chairman of the Social Science Research Council to make "a preliminary survey of the problems in the field of agricultural economics." The Committee consisted of:

Professor H. C. Taylor, Institute for Research in Land Economics and Public Utilities, Northwestern University, Chairman;
Professor J. D. Black, University of Minnesota;
President K. L. Butterfield, Michigan State College;
Dr. J. S. Davis, Food Research Institute, Stanford University;
Dr. L. C. Gray, Bureau of Agricultural Economics, Washington, D. C.;
Dr. E. G. Nourse, Institute of Economics, Washington, D. C.;
Professor G. F. Warren, Cornell University.

They immediately divided among their members the task of drawing up a broad survey of current research in agricultural economics, and this was considered at a final meeting of the Committee held in connection with the summer conference of the Social Science Research Council held at Dartmouth College, August 16-21, 1926.[1]

II. Research Work in Agricultural Economics

The recommendations of the Committee are based not only upon the familiarity of its members with a considerable number of phases of research in agricultural economics, but upon special reports upon the work of various agencies engaged in this field. . . . A brief summary of the survey follows:

(a) Statistical Data and Statistical Research

The *statistical data* which constitute much of the basic material for research in agricultural economics are gathered very largely by the Bureau of the Census and various bureaus of the United States Department of Agriculture; but these are supplemented by data collected by many other public and private agencies.

. . . The census data are of great importance, but there is adequate basis for a conviction that the census data on important agricultural matters cannot be accepted as complete and accurate, and that the degree of accuracy and completeness varies in different fields and from census to census. Moreover, in certain particulars important for research in agricultural economics or rural sociology,, the classifica-

[1] Owing to President Butterfield's absence in Europe Dr. J. H. Kolb, of the University of Wisconsin, served in his place. Dr. Warren was detained by illness and hence had no opportunity of seeing the report of the Committee before it was submitted. Upon examination subsequently there were several places at which he did not find himself in full agreement with the report, and his comments on these points are presented as footnotes.

tions are too broad or the tabulation insufficient in detail to serve the needs of research workers. A valuable beginning has been made in the tabulation of certain census data by townships, such tabulations being made for certain states at their expense.

Other census data, such as the quinquennial (1899-1919) and biennial (1921-)censuses of manufacturers, and the monthly reports of cotton ginned (191-) and flour milled (1924-), are useful material in this field. Preparations are being made for a world census of agriculture in 1930.

The Department of Agriculture gathers regularly detailed statistics of crop acreage, crops, livestock products, and certain other statistics and assembled data from private sources on receipt and shipments, stocks, and prices, and also corresponding data from foreign countries. The Grain Futures Administration gathers an immense quantity of data on future trading in grain, part of which is published in monthly press releases and annual reports; and the Packers and Stock Yards Administration collects extensive data on receipts, shipments, and sales of livestock.

Statistics of foreign trade in agricultural products are collected and published by the Department of Commerce, which also assembles some data on stocks, domestic trade, and prices of agricultural products. The Bureau of Labor Statistics (Department of Labor) collects and publishes wholesale prices of agricultural products, and issues these, together with group indices of farm products and food stuffs, in monthly and annual bulletins, as a part of its work on wholesale prices in general. The Federal Trade Commission and the U. S. Tariff Commission, in connection with special investigations, have gathered and published considerable collections of data significant for studies in agricultural economics. So also have other federal agencies, including certain Congressional Committees, and the departments of agriculture of certain states.

The leading private agencies which collect and publish data in agricultural economics are certain trade and financial journals, and the chambers of commerce or boards of trade in leading commercial centers.

Despite the immense volume of statistical data, there are many important gaps, and there is need of constant effort toward enlarging the scope and improving its accuracy.

In recent years a limited but increasing amount of *statistical research* upon problems in agricultural economics has been undertaken in the Bureau of Agricultural Economics, the Grain Futures Administration, the Federal Trade Commission, certain agricultural colleges and experiment stations, scattered individuals chiefly in other colleges and universities, and the leading private research bureaus and institutes. These studies, thus far, have dealt chiefly with agricultural income, costs of producing farm products, farmers' costs of living, crop forecasting and estimating, production and price indices, elasticity of demand, price analysis and forecasting, speculation in grain, relations between

cash and future prices, population analysis, and the tariff. Several of these are touched upon in other sections of this report. There is need of much further extension of this type of research, as men with adequate training become available.

(*b*) *Research by Agricultural Experiment Stations*

This work has expanded from small beginnings about fifteen years ago to a large volume of research as measured by number of projects and funds expended. For the year 1924-25, 234 projects in agricultural economics have been reported to the Office of Experiment Stations. Even so, this represents only four per cent of the total number of agricultural research projects in the several agricultural experiment stations. However, the passage of the Purnell Act makes additional funds available and places special emphasis on research in the field of agricultural economics as well as home economics and rural life problems. This has already considerably stimulated work in agricultural economics and the number of projects reported in this field for the year 1925-26 is 443 as compared with the 234 mentioned above.

While accurate classification of projects is difficult, the following table will show approximately the scope of experiment station work in agricultural economics, and reveal something of the tendencies in its development:

	1924-25	1925-26
Cost of production and accounting	59	85
Farm labor	2	5
Farm organization and management	35	64
Economics of production	--	36
Cooperation	8	15
Marketing	43	101
Prices	9	12
Land settlement	2	2
Land tenure	10	13
Land values	11	8
Taxation	--	10
Credit	7	10
Rural life studies	34	60
Miscellaneous	14	22
	234	443

It will be observed that considerable stress is placed upon cost of production studies. These have frequently been developed in the past with the aim of determining commodity costs in their relation to prices with special emphasis on the concept of fair price. This work has served to reveal the limitations of the objective itself, and the present tendency in other projects is to secure data serviceable in improving the organization and operation of the farm. To some extent this is being given helpful application to the problem of agricultural readjustment. To some extent also it is being brought to bear upon questions of agricultural freight rates and tariff schedules.

Farm management studies continue in a place of great prominence and a large number of studies appear under the new heading "Economics of Production." In this general field it is noteworthy that more refined statistical methods are being employed or developed for the analysis of

these results, and[2] their character is changing so as no longer to take the general economic environment for granted.

In this general field there is notable also, a tendency to develop studies which envisage an entire industry such as the range livestock industry and the apple industry, in which several states must co-operate. In some studies the industry is analyzed (a), from the standpoint of market requirements and opportunities, price and production trends, trends in the prices of the factors of costs, etc., and (b), the necessary adjustments in the individual form as determined by investigations of its internal economy. The resulting necessity for more thoroughgoing knowledge of the widely differing characteristics of farm economy in typical geographic regions, is leading the states to undertake a more complete regional approach to the intensive study of the major characteristic farming systems within their boundaries.

Another type of production studies is directed to the examination of a region or trade territory for the purpose of examining its consumption requirements and productive possibilities as related one to another with the idea of learning whether a better economic adjustment could be secured through a greater degree of self-sufficiency.

Projects in the field of marketing and related subjects of co-operation and prices represent the largest class outside of production economics. They have shown considerable progress from the earlier types of descriptive studies to those of a more analytical character, have employed more adequate methods of theoretical analysis and more refined processes of quantitative measurement. In the nature of the case, practically all of these studies are limited to the structure and functioning of markets in the producing territory and such phases of terminal marketing as are closely related thereto. Other analyses of terminal wholesaling and jobbing are relatively undeveloped, and practically the whole field of retail markets lies outside the scope of agricultural experiment stations' activities.[3] A considerable number of research projects are being developed in response to the demand for more light on specific problems of internal organization and operation which has been developed by the growth of co-operative marketing enterprises. To a much less extent has there been development of the broader economic significance of these institutions.

Land economics, taxation, and credit studies constitute another important group of experiment station projects, though except in the field of taxation there is less tendency apparent to extend in these fields than in those previously mentioned. In the main the staffs of state institutions are trained in the fields of production economics and marketing and offer rather inadequate resources for the specialized study of some of these other fields. At the same time specialized stu-

[2] Professor Warren would omit the remainder of this sentence: "It adds nothing and may cause confusion."

[3] Professor Warren suggests the omission of this sentence: "The Committee was evidently not informed as to the large amount of work in terminal markets that is being done. Considerable work is being done by the Experiment Stations in the field of retail marketing and much more promises to be done in the near future.

dents in the fields of taxation, transportation, credit or the like, have not generally shown very deep interest or great proficiency in analyzing the distinctively agricultural phases of these problems.

Rural life studies represent a field of somewhat recent development but of quite vigorous growth, as indicated by the increase from 34 projects in 1924-25 to 60 for 1925-26. These represent a wide variety of domestic, community and institutional studies. They have been largely descriptive in character until the last few years, when better analytical and quantitative methods have been introduced in the leading institutions. The spread of this movement over the whole field is somewhat retarded by the inadequate training of many of those who have entered this field of work.

The fact that certain federal funds are available equally to all states has tended to make the program of work in this field nation wide. Obviously the greater interest in some states, and greater willingness to support the work from state funds has resulted in earlier and more adequate development in some states than in others. A certain somewhat tenuous co-ordination of the work of experiment stations through the Office of Experiment Stations of the United States Department of Agriculture, has resulted in a certain comparability of programs or even imitation from state to state. Probably the character of the organization is such as to facilitate a very satisfactory scheme of co-ordination throughout the field.

(c) *Research Work of the Bureau of Agricultural Economics*

The work of the Bureau of Agricultural Economics of the United States Department of Agriculture involves an annual expenditure in the vicinity of five million dollars. It is of great significance not only because of this volume and the wide range of its activities, but also because of its influence on the work of the various states. At the same time much of the work of the Bureau has been of a technological character incidental to regulatory work, of the police character involved in this regulatory work itself, or in the way of gathering original data for purposes of crop estimating or other statistical purposes. Even such work frequently gives rise to real research activity such as studies in the methodology of estimating and paves the way for analytical market and price studies by standardizing grades and making possible the securing of comparable price data. Probably at least $1,000,000 of the total budget of the Bureau may be considered as going to genuine research activities. Many activities of the Bureau have reflected the exigencies of political stimulation, or of public interest, such as cost of marketing studies growing out of war-time conditions. However, there has gradually been developing a more scientific viewpoint and more comprehensive and systematic organization of the work.

Aside from its work in collecting statistical information concerning agriculture as a basis for research work and the methodological studies referred to above, the Bureau is now developing various series of

index numbers and developing its statistical work over into the field of analysis and interpretation, making periodic outlook reports designed to reveal the future trend of acreage, numbers of livestock, production and prices.

Marketing studies originally merely technological and descriptive in character, are now being supplemented by analytical studies devoted to many segments of the marketing process. These involve the analysis of the functioning of produce exchanges, terminal market agencies, country buyers, co-operative organizations and the like. Those have supplemented somewhat the predominantly local market studies of the State Experiment Stations and have covered part, though not all, of the field of central market wholesaling and jobbing. Like the state studies they have done comparatively little with the work of the retail market.

Co-operative marketing mentioned incidentally above has, under a recently enacted law, been made one of the major lines of work of the Bureau. The apparent trend of their studies will be toward detailed analysis of organization and market practices from the point of view of commercial efficiency of the separate organizations. To a lesser extent the social aspects of the movement are being studied.

During the last few years there has been a notable increase in emphasis on analytical studies of market prices and price relationships. These include the history and trend of prices received by farmers and market price differentials. Geographic, seasonal and cyclical variations of prices, relations of prices to variations in yield, and market supply with special reference to lags in adjustment factors influencing consumer demand and possible methods of reducing price fluctuations. Considerable attention has also been paid to problems of relation of weather to yield and thus to price, and of other problems of price forecasting.

In the field of production economics the work of the Bureau parallels and is closely co-ordinated with that of the experiment stations already discussed. To a considerable extent in fact, the Bureau occupies a position of leadership in this field as far as the experimental stations are concerned.

In the field of finance and credit, the Bureau of Agricultural Economics has gone beyond the limited scope of experiment station activities. This would apply particularly to those studies of insurance, but also to the studies of the credit needs of farmers and sources and conditions of credit extension. It has also done some work in the field of taxation.

Some years ago a considerable expansion of research work in land economics was begun, involving the study of available land resources, land utilization including public land policies, the economics of reclamation and settlement, trend of values and the factors entering into land value, land ownership and tenancy relations, and the broader social aspects of the farm tenure forms. This has included some studies of the farm laborers and conditions of employment, although in general

the labor problems of agriculture have not been very fully investigated, either by federal or other agencies. The same might be said of the transportation problem.

Recently the Bureau has undertaken certain estimates of the income of farmers and the influence of various factors thereon. This represents a beginning in the general field of distribution of income to the agricultural class, in which interest has been stimulated by post-war conditions in agriculture. As yet, however, the field has by no means been comprehensively developed.

(*d*) *Research by Other Public Agencies*

The Weather Bureau has been studying relations between weather factors and crop yields. The Grain Futures Administration is studying the influence of various classes of trading on price movements, and into the influence of news items and market gossip on prices in central markets, with special reference to manipulation. Studies in hedging and in public participation in grain speculation are in hand or in contemplation.

The Bureau of Home Economics is conducting an extended investigation into costs of living among farmers.

The Women's and Children's Bureau of the Department of Labor have investigated and reported on the labor of women and children respectively in the sugar beet fields and other agricultural industries.

The Federal Trade Commission has conducted intensive investigations in the grain trade, flour milling, the meat packing industry, milk and milk products, sugar, cotton, tobacco, commercial feeds, fertilizers, and co-operative marketing. In general these studies are concerned primarily with prices and with forms of organization calculated to raise or control prices. The Tariff Commission, likewise, has made numerous studies of economic phases of agriculture.

The Port of New York Authority has conducted important inquiries into the terminal marketing of agricultural products in that city.

A few state departments of agriculture or bureaus of markets conduct a limited amount of research, commonly upon local or temporary conditions.

(*e*) *Research by Faculty Members and Graduate Students in Colleges and Universities*

In the agricultural colleges most of the research work of faculty members is done on projects discussed in the preceding section and the final section of this part of the report. At Northwestern and Stanford Universities it is largely done in connection with the research institutes established there. Apart from this, to a limited extent in these institutions, and also in other colleges and universities, certain faculty members are doing research in the field of agricultural economics, but no summary of their work can readily be made.

The work of graduate students, chiefly in agricultural colleges but

to a considerable extent in other colleges and universities, especially with those having research institutes, is of considerable extent and increasing importance. In the agricultural colleges it tends to follow the lines of research projects there under way, but is more scattered and less standardized in character. A classification of subjects of dissertations in hand in this field, by candidates for master's or doctor's degrees, showed the following subdivisions:

	Ph. D.	A. M. or M. S.
Production Economics	10	13
Marketing	20	27
Land Economics	9	7
Prices	5	9
Taxation	4	--
Credit and Finance	5	6
Transportation	--	2
Industries	2	4
Consumer Demand	--	1
Farmer Organizations	--	2
Farm Income	1	--
Miscellaneous	3	9
Total	59	80

Under proper direction and with increased financial aid for field and office expense, this work, especially by candidates for the Ph.D. degree, has large possibilities of direct value in addition to its function as a part of the candidate's training. There is need, however, of establishing standards of research in this field, and in particular of research in subjects of a historical, comparative, or methodological character which are often relatively largely neglected for topics of local interest.

(f) Research by Private Research Bureaus or Institutes

Since the war a number of research bureaus or institutes of high grade have been established, and several of these are devoting funds to individual or organized research in agricultural economics. None of these is concerned solely with this field, and each derives strength from the continued association of research workers studying problems in several fields. In the main the projects undertaken by these organizations are in the fields of social economics, and their work is doing much to strengthen this phase of research relating to agriculture; and most of the institutes are including in the scope of their researches a consideration of conditions in foreign countries and international economic relationships.

The National Bureau of Economic Research has included in its studies of the national income (in monetary terms) estimates of income from agriculture as a source, and by farmers as a class. These estimates are to be brought up to date from time to time.

The Institute of Economics has published or under way studies in tariffs on important agricultural products (sugar, wool, cotton,

vegetable oils, wheat, and cattle) and the relation of the tariff to agriculture. Its agricultural section has published or in hand several studies in agricultural finance, marketing (including co-operative marketing), agriculture and the business cycle, American agriculture and the European market, and the agrarian situation in Mexico.

The Institute for Research in Land Economics and Public Utilities is devoting considerable attention to agricultural land problems, notably in respect to land tenure, land utilization, land taxation, farm mortgage interest rates and farm standards of living.

The Food Research Institute is devoting much of its resources to the study of staple food commodities, thus far notably wheat and wheat products, and fats and oils, predominantly from an economic standpoint but with accompanying consideration of scientific and technical aspects; and much of this work may be considered as falling within the field of agricultural economics. In such broad fields as farm cost studies, methods of crop estimating, food consumption, the tariff in relation to agriculture, and public policy toward the farmer, some work has been done not confined to the commodities mentioned above.

The Scripps Institute for Research in Population Problems is studying phases of population of important concern to rural sociologists.

(*g*) *Research by Other Agencies*

A number of other agencies are doing some research in agricultural economics and rural sociology. Commercial research, by companies such as meat packers, flour millers, and bakers, and their trade associations or industries, has already some significance for the study of agricultural economics, and may have much more in the future. The National Industrial Conference Board has recently published a study of the agricultural situation. Certain business services, such as The Brookmire Economic Service, are employing research talent on such subjects as farmers' purchasing power in regions, states, and localities, and the market position and outlook. To a limited extent, farm organizations or their central organizations have undertaken research, though generally without great success. Certain other types of agencies are mentioned in the following section. On the whole the prospect is that, except in the field of commercial research, agencies of these various types will continue to be of relatively minor importance.

(*h*) *Summary of Research Projects in the Field of Rural Sociology*

From the summary table of projects presented below, it is evident that the research in this field can be largely classified under relatively few headings, though the work is far from uniform in character or well correlated as to central problems.

Types of Projects	Recently Completed and Under Way						Finished as of Jan. 1, 1926
		by U. S. Department of Agriculture and Co-operating States					
	All	All	U. S. Dept. Agric.	Purnell	Other	Other Agencies	
Total	91	63	3	25	35	28	70
1. Population	9	5	1	2	2	4	4
2. Group Organization	14	13	--	6	7	1	13
3. Standards of Living	24	22	1	4	17	2	22
4. Social Aspects of Tenancy	1	1	--	--	1	--	12
5. Planning and Community Buildings	--	--	--	--	--	--	7
6. Enterprises and Institutions	16	10	1	4	5	6	12
7. Young Peoples' Organizations	4	3	--	2	1	1	--
8. Psychological	3	3	--	2	1	--	--
9. Physical Environment	1	1	--	1	--	--	--
10. Local Government	2	1	--	--	1	1	--
11. Social Aspects of Economic Relations	8	3	--	3	--	5	--
12. Health and Welfare	9	1	--	1	--	8	--

The following classifications include the majority of the projects, both federal and state:

1. Population—composition and changes
2. Group organization including town and country relations
3. Standards of living of farm families
4. Community enterprises and institutions.

For the other research agencies such as the Institute for Social and Religious Research, the Scripps Foundation, the American Library Association, the Federal Council of Churches, the U. S. Children's Bureau and various private foundations, federal and state bureaus or commercial agencies, the projects classify mainly as follows:

1. Community enterprises and social institutions
2. Population analysis
3. Health and welfare
4. Social aspects of economic relations

The studies of rural population have been concerned with analysis of composition and change. Important contributions have been made in complete retabulations of census data in eight selected counties and of 177 selected villages. Projects in hand are attempting to measure changes and to work with the vital statistics for rural communities.

The studies of rural group organization includes structural analysis of open country neighborhoods, of selected small towns and villages, of town and country relations, and of special types of groups or localities. The national Purnell Committee is urging studies of rural young people's organizations. There is a real need now for studies of group processes and changes over a period of time and of the psychological backgrounds of group behavior.

The studies of standards of living of farm families have been given major emphasis by the Bureau of Agricultural Economics and by about twenty co-operating state institutions. The method has been standard-

ized and attempts to measure household expenditures in terms of dollars. It is important now to work out other standards of measurement and of knowing what factors enter into an adequate standard.

The studies of community enterprises and social or welfare institutions have beeen popular with states just entering this field of research and with private agencies interested in promoting community welfare. Such projects have appealed to the practical sense of administrators and have value in calling attention to elements in rural life beyond food, shelter and clothing, namely the community relations of education, religion, sociability and welfare.

III. Commentary

From the preceding survey, it is evident that a very large amount of work is under way covering a wide range of problems in agricultural economics in all parts of the country. We would estimate that during the coming year approximately $1,500,000 will be spent by governmental agencies, state and national, for investigational work in these fields. During the next four years the increase made possible under the Purnell Act will enlarge this total by something like another million dollars. Private agencies provide further resources which we estimate at more than $100,000 yearly.

Turning from quantitative to qualitative consideration, it must be admitted that a rather large amount of this investigational work is concerned with questions of private efficiency or profit rather than public welfare or social economics. Generally speaking it is easier to get appropriations for work in this business enterprise field than to get support for research of broader social or national character. There is danger that work begun as investigation in new fields be continued unduly as routine service instead of passing on to further genuine researches of the more intricate but valuable type based upon and made possible by these earlier investigations. The securing of such a program of research endeavor is one of the important needs in this field. [4]

In the second place, the work now being done is very uneven in character. This may be explained quite largely by historic reasons. In places where the work was begun early, the descriptive and elementary stages have been passed through and enough time has elapsed to develop better methods and to build up more specialized and more adequately trained personnel. The newer comers in the field and the smaller institutions have tended to lag behind, frequently to use less fully trained men, and not to find themselves in a position to employ staffs large enough to permit a desirable degree of specialization.

It must be frankly admitted also, that a serious difficulty in this connection has arisen from the fact that the direction of attention and

[4] Professor Warren says: "I am in absolute disagreement with this paragraph. It seems to apologize for the work in private efficiency and infers that work dealing with governmental problems is of a broader nature. Farm management is just as broad as political economy and vice versa. One studies how to run a farm and the other how to run a government. Neither is more dignified nor more profound than the other."

the flow of funds into these lines of work have proceeded so rapidly as to outrun the supply of competent men who could be selected and trained in a manner corresponding to the needs of the work. This defect has been remedied in part, but has probably resulted in the building up of relatively large and specialized staffs at a few places rather than bringing the standard of work done in any given line at all institutions up to a satisfactory level.

Probably enough work has now been done in most of the major lines of agricultural economics research to have built up a methodology and standards of investigation and analysis which have established at least tentative standards which could be very advantageously adopted through out the field. Until such a standardization takes place a large amount of imitative, unproductive and even misleading work is bound to be done at places where a more effective use of labor and funds is much to be desired.

A third comment on the present status of the work is that it is rather fragmentary in character. This applies both to the discreetness of local studies on problems of national or at least regional scope and interest, and also to the fact that work has been prosecuted on various segments of a problem separately. Too little effort has been made to integrate all the steps and develop a comprehensive and coherent analysis of problems as a whole from producer to consumer, local market to world market, or whatnot.

The process of overcoming this fragmentary character of agricultural economic studies involves not merely a closer correlation of the activities of experiment stations in adjacent states and of these with the work of the Bureau of Agricultural Economics of the U. S. Department of Agriculture, but also a closer approchment between these institutions which primarily approach the problem from the standpoint of the agricultural producer with other agencies not so definitely affiliated with this particular constituency. Thus for example, studies of agricultural marketing primarily from the producer's end should be supplemented by investigations carried on under the auspices of universities in urban centers or other agencies in a position to study terminal marketing problems effectively, and to bring to bear upon the problem the information and points of view of the consuming class.[5]

[5] Professor Warren says: "I am in absolute disagreement with this passage. Some of the most important studies in marketing are those which followed a particular product through all the channels of trade. Such studies are being made by the Agricultural Colleges and the men who make such studies need to be thoroughly grounded in agriculture as well as in economics. They need to know the product from the beginning to the end. Typical of the excellent work in this field is that of Ross, who has studied milk marketing in Chicago and New York.

The Committee evidently was quite misinformed as to the extent to which Agricultural Colleges are working in the retail field. In fact so many different men are appearing in our large cities bothering the chain stores, wholesalers, and to some extent retailers that in a committee meeting which I attended in St. Louis, one of the problems of discussion was how to prevent the Experiment Station men from becoming burdensome by having so many different ones go to the same man.

Other studies in marketing may deal with the retail agency as such rather than with commodities. Problems of this nature do not necessarily require an agricultural background. They are not merely studies of agricultural marketing, at

Similarly the activities of various private research agencies should be made to complement the activities of the governmental agencies which occupy so large a part of the field. The former are in a position to prosecute more freely certain lines of investigation relatively difficult to the institution maintained from public funds. We have pointed out in our survey that much of the work being done by such institutions must be given a high degree of immediate applicability for the answering of questions of individual prosperity, efficient operation of farmers' organizations, etc. It is highly desirable that the social aspects of all the problems of agricultural economics be developed to an equal degree, and in this the supplementary activities of urban universities and private research agencies is extremely important.

Finally, it should be emphasized that there is a certain danger lest work in this field tend to develop a special class economics or partisan point of view. To remedy this it is highly important that the activities of agricultural economists be closely correlated with those working in other parts of the general economics field. As random illustrations it may be suggested that problems of taxation, credit, transportation and the occupational movement of population should be developed in a unified manner which would neither neglect nor distort the agricultural aspects.

The Committee believes that the principal problem in this field, therefore, is not so much the stimulation of activities or expansion of progress as it is (1) the promotion of a more effective expenditure of funds already available; (2) the correlation of the various efforts, and (3) raising standards of work throughout the field.

IV. Recomendations

It may be called to the attention of the Council that there already exists a professional organization known as the American Farm Economic Association having a membership of approximately 800 including a large majority of the research workers in the field of agricultural economics, and publishing an official journal, viz., The Journal of Farm Economics (quarterly). The last annual meeting of this Association was devoted to consideration of research problems in a very comprehensive manner and it is the opinion of the Committee that the time is opportune for setting up a permanent agency for the study of the research program and methods of this whole group.

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least not merely the marketing of American farm products. I should like to see this statement either omitted or completely rewritten. As it stands I should not want my name signed to the report with a statement in it that implies that the Agricultural Colleges are doing little in the retail field or that they should do little in this field; and I would be equally averse to granting that others than Agricutural College men are better qualified to study the commodities all the way through the channels of trade. In any event, regardless of what may be thought of it, it is the Agricultural Experiment Stations that are going to do the job. They have the money for it. They are not confining their efforts to the marketing agencies within their own states.

I do not know how many colleges are now studying marketing of products in New York City, but our men have met a considerable number. Some of the distributors have become disturbed for fear that there would be such a flock of men arriving that it would take too much time to bother with them all.

Standing Committee

We would recommend, therefore, that a committee similar to the present advisory committee on problems of agricultural economics be constituted as a permanent standing committee of the Social Science Research Council as a means of serving as a clearing house of information as to research now under way or in contemplation by the various agencies dealt with in Part II of this report, as a conference body on standards and methods and as an effective means of contact between agricultural economists and rural sociologists and the several allied groups represented in the Social Science Research Council.

To make such a plan fully effective, it is highly important that such a committee extend its activities over the whole year rather than limiting them to a summer conference and a short period of preparation prior to this meeting. It is our belief that funds for secretarial and travelling expense should be made available to the committee and also an additional sum sufficient to pay the salary of a competent man serving for at least a portion of the year on leave of absence from the institution with which he is regularly connected. Such a man (or succession of men) serving on full time for a period of approximately six months each year, could perform an invaluable service in studying intensively the actual organization and activities over some portion of the field decided upon by the committee and preparing on the basis of this study a carefully considered report to be presented either at the summer conference in Hanover, or at the annual meeting of the American Farm Economic Association, or both. Such study and report should be a means of bringing the knowledge and inspiration of what is being done by workers at one institution to the service of those in other institutions, to reveal any gaps or duplications in the work, and tend to standardize and improve research work over the whole field.

It is our belief further that the affiliation of this committee with the Social Science Research Council would be a means not alone of bringing the prestige of that body helpfully to bear upon the development of agricultural economics research work in the various institutions, but that it also would furnish a valuable opportunity for coordinating separate parts of the work with closely allied activities being carried on by historians, economists, psychologists, and others not specifically identified with the problems of agricultural economics. Numerous instances in which problems upon which agricultural economists are engaged in research are simply parts of larger problems not specifically agricultural in character, will be referred to later in this report.

In order to carry out the specific recommendations as to a standing committee, or permanent secretariat, it is our belief that funds of approximately $12,000 for the ensuing year should be made available. A proposed budget follows:

One man, agricultural economics, six months	$3,000
One man, rural sociology, five months	2,500
Clerical service, twelve months	2,500
Travel for two men	2,000
Travel for meeting of committee	600
Contingent fund	1,400
	$12,000

While the committee regards this recommendation as of the most immediate and vital importance, it also desires to submit several other proposals.

Improving Doctors' Dissertations

Probably about twenty doctors' dissertations are now being completed in agricultural economics alone each year. At least sixty are listed (Journal of Farm Economics, April, 1926) as completed or to be completed in 1925, 1926, and 1927. The quality and value of these is greatly reduced because the candidates do not have the funds available for the expense of field work and clerical assistance. Universities in urban centers usually have no funds whatever for such use, and experiment station funds are available to only a limited extent, often just because they do not relate especially to local and immediate problems. Not having the necessary means for undertaking vital problems, candidates in many cases are making their dissertations mere practice work. It is believed that a small fund could be very advantageously used each year in paying the field and clerical expenses of capable and properly trained graduate students working upon their doctoral dissertations under competent leadership. We, therefore, recommend the establishment of a fund of $5,000 to be used in the manner indicated:

(1) Assign it in amounts running from $200 to $1,000 as a maximum, to from five to ten graduate students each year, to be used for field and clerical expenses only, upon presentation of vouchers.
(2) Appoint a committee to pass upon all requests. Request detailed outline of project and an itemized estimate of budget of expenses.
(3) Restrict the awards to projects of the type that are not generally suported by experiment station funds.
(4) Establish an additional fund of $3,000 for printing not more than three of the best doctoral dissertations in agricultural economics and rural sociology contributed during the following year, awards to be made by a special committee. It is to be understood that only such dissertations will be printed as are conspicuously worth publication.

A special reason for this last recommendation is that some valuable theses are not now generally available.

Measurement of Agricultural Prosperity and Rural Living

The following considerations are within the purview of this project:

A. *How farm families live.* In the first instance, the results will be merely comparisons between different agricultural districts and rural social strata, and also with select groups of urban people, such as common laborers, factory workers, trade workers, clerical groups, merchants, professional groups, etc. The data will be in the form of physical descriptions and measurements of housing, clothing, food, recreation, education, sanitation, etc. They will give a picture of the content of living of each of the groups. The social importance of such information is apparent. There is vast difference of opinion as to how well farm people are living today.

B. *Reasons for variations in quality of rural living*—by districts and social groups. This will serve as a guide to procedure in attempts to improve rural living.

C. *The per-dollar purchasing power of the farmer's money income.* The things for which farm families spend their money income will be determined under A. The results may take the form of year-to-year index series for comparison with similar series for select city groups, or with the Bureau of Labor general index. The possibility should also be considered of an absolute comparison of per-dollar purchasing powers of money incomes of farmers and of select urban groups. The difficulty involved is that farm and city families spend their money for greatly differing lists of commodities.

D. *Savings and accumulation of wealth of farm people*—by districts and social groups, and comparison with select urban groups.

E. *How hard farm people work*—hours of labor, working conditions—by districts and social groups, and comparison with select urban groups.

F. *Farm family incomes*—(a) money incomes, (b) indices of money incomes, (c) income in goods and services, (d) other types of income.

G. *The possibility of absolute comparison of farm incomes (all types combined) and incomes of select urban groups.* The difficulty is that it is not possible to reduce both rural and urban incomes to one common basis that fits both. Farm incomes calculated on the basis of value on the farm, and urban incomes on the basis of value in the city, are not comparable. They have entirely different per-dollar purchasing powers, and under C above is pointed out the difficulty of determining comparable per-dollar purchasing powers. For purposes of use in studies in city-country migrations, it is, however, proper to estimate on the one hand the cost of buying in the city the equivalent of a farm family living including all forms of satisfactions; and on the other hand, the cost of procuring in the country the equivalent of a city living.

Procedure

Arrange for personnel to assemble and classify the pertinent data already available, make a careful deductive analysis of the problem and its difficulties, consult with interested groups and persons capable of

giving helpful suggestions, and report a suggested plan of procedure for a comprehensive project to be offered to the Council for consideration later.

This can be carried forward on a moderate basis for next year by some co-operative arrangement between the Bureau of Agricultural Economics and divisions of agricultural economics and rural sociology in several interested universities, making use of the services of graduate students working upon dissertations. A few thousand dollars of expense money for clerical help and travel to conferences would greatly facilitate the work; but considerable can be done without it.

Research on Agricultural Depressions

The subject of agricultural depressions presents a field for research in which there appears to be special need and opportunity for highly important contributions to be made. The occurrence of a severe agricultural depression since the war not only makes intensive investigations in this field of peculiar timeliness and general interest, but affords large quantities of fresh material. The development of statistical methods, especially in regard to prices and the business cycle, has created a new opportunity for effective study of this field, and the studies of business cycles makes possible a study of relations between agricultural and business cycles. Though several organizations, notably the Bureau of Agricultural Economics, the Institute of Economics, and certain Russian research bodies and individuals, have undertaken work in this field, the human and financial resources available for the necessary historical, comparative, and statistical research have been far from adequate for the task.

The Committee believes the time is ripe for taking a definite step toward promotion of work in this field, but not for proposing a specific project or line of attack. It therefore recommends that a Committee of three to five be appointed, including interested representatives from the Bureau of Agricultural Economics, the Agricultural Historical Society, and the Institute of Economics, with the task of making a reconnaissance survey of this field, and of proposing within a year, to the Council or to the standing Committee on research in agricultural economics proposed in this report, a plan for promoting research in this field.

Country-city and city-country population movements

The Committee desires to call attention to the great importance of research in those phases of migration which are set up in the effort of people to adjust themselves to occupations more in harmony with their desire, or in order to secure larger income. Since the beginning of the agricultural depression in 1920 there has been a very great movement of farm population to the cities, but there has been at the same time a back flow equal to about three-fifths of the city-ward flow. It is probable that the back flow is evidence of inability to make a

successful move out of agriculture into other industries. This should be studied with a view to giving guidance to this movement which is necessary to a right balance between farm and city population. The study should also include an analysis of the people moving in both directions and a study of the effect of the movement upon the residual population. The Committee requested its Chairman to present this problem to the Committee on Migration with the hope that the latter Committee will endeavor to have the agricultural phase of its problem suitably developed.

Submarginal land and submarginal farms

Dr. Ely calls attention to the fact that if no submarginal land were in use by farmers and if there were no submarginal farmers, farmers would be prosperous. In order to bring about this condition a study, largely theoretical and philosophical but with a great deal of objective research, must be undertaken. He proposes "A Project for Reducing to Statistical Measurement, and Other Concrete Expression, the Extent and Significance of the Utilization of Submarginal Land," as follows:

I. Definition and concrete measure of what is marginal and submarginal.
II. Where is the land in the United States used for agriculture that is submarginal?
III. How large a factor is the product of this land in affecting the prices of farm products?
IV. What are the conditions that have been and are responsible for the use of this submarginal land for farming:
    (a) Conditions that have led and are leading to its use.
    (b) Conditions that are responsible for its continued use.
V. What are the social and economic costs and consequences to the nation of the continued utilization of this submarginal land?
VI. What can be done about it? A critical examination of proposals for farm relief and a program based on the conclusions reached in this study.

The Committee recommends that a Sub-committee be appointed for the task of making a reconnaissance survey of this field and of proposing within a year a plan for promoting suitable research.

Project for improving the Federal Census

Progress in many fields of social science, particularly economics and sociology, is greatly impeded by the defects in the present census data. It appears that the principal reason for this is inadequate support by Congress. Not enough is paid the enumerators to secure careful returns, and the staff for supervising the enumeration and analyzing the schedules is hopelessly inadequate. Congress has failed to increase

the support with the rise in the price level. It is here proposed that a careful analysis be made of the situation and that a report be prepared to submit to the proper persons.

We suggest the appointing of a Committee of workers in this field now acquainted with the census who will prepare a report and submit it to the Council at an early date, so that it may call upon associations in the social sciences to press the matter at their next annual meetings.

Editor's note: The above report was favorably received by the Committee on Programs and Policies of the National Science Research Council, and the sum of $12,500 requested for carrying out a survey of the agricultural economics field was granted. The Agricultural Advisory Committee accordingly met in St. Louis at several times during the sessions of the Farm Economic Association to formulate plans for carrying this work out effectively. It was felt by all members of the Committee that this work should articulate closely with that of the Committee on Research of the Farm Economic Association and must have the full understanding and cordial support of all members of the Farm Economic Association.

Accordingly, Dr. Taylor, as Chairman of the Advisory Committee, laid the matter before the Association at its luncheon session on December 30. Following his discussion, it was moved that the above report be published in the January issue of the Journal of Farm Economics as a means of acquainting our members with the general purposes of such a study and plans for carrying it out. It was further moved and carried that the President of the Farm Economic Association appoint a committee to include himself, Dr. Warren, the present Chairman of the Association's Committee on Research and also a member of the Adivsory Committee of the National Research Science Council, along with such other members as would be most helpful in promoting the purposes of the survey.

It is hoped that all members of the association will cooperate in every way possible in taking full advantage of this unusual opportunity to make a comprehensive examination of existing activities with a view to their more systematic development and better correlation. Since no individual could supervise the whole study, tentative arrangements have been made to divide it regionally among five representative men covering the subject matter of agricultural economics, and to have an additional man covering the rural sociology aspects of the work. It is hoped that a preliminary report can be laid before the Advisory Committee at its session in Hanover, in August, 1927, and that this may thereupon be worked up in a final form for submission to the Farm Economic Association in such a way as to prove of great stimulus and help.

BOOK REVIEWS

The Agricultural Problem in the United States. The National Industrial Conference Board, New York, 1926.

This volume is one of a series on current economic and industrial problems, prepared and published by The National Industrial Conference Board. It represents, presumably, the collective judgment of the Advisory Committee on Agriculture of this body. The study itself, on which the text is based, was conducted by Dr. Virgil Jordan of the Board's Research staff.

The purpose of the work, as stated in the foreword, is "To examine the main features of the agricultural problem in the United States* * * to clarify the problem as a whole so as to contribute to a better and more general understanding of it not only by American industry, but by the general public, and so to provide a common basis for such sound policies as may assure the country a prosperous agriculture as a part of a prosperous national economy."

In its 150 pages the book discusses, first, "The Economic Position of Agriculture," second, "Factors in Agricultural Income," and, third, "Factors in Agricultural Costs." In the introductory chapter are listed the most important questions, as follows:

"1. The trend of the economic position of agriculture as a whole in respect to the relation between those engaged in it and our land resources, on the one hand, and their relation to the rest of our economic life, on the other hand.

"2. The current position of agriculture from the point of view of the rewards of those engaged in it as workers and investors.

"3. The economic position of the most important groups of farmers, namely, those engaged in the most important branches of agricultural production—cotton, corn, wheat, hog and cattle-raising and dairying—in those sections where these branches of the industry are most concentrated—the East and West North Central and the South Atlantic and South Central States.

"4. The factors underlying the current position of agriculture as a whole and its most important branches and geographical sections."

The reader probably will find Chapter 2, entitled, "The Economic Position of Agriculture" the most important part of the work, since in it there is presented an explanation of the underlying economic forces and processes by which agriculture reached its present unsatisfactory situation. In this the Board differs from the usual explanation, which finds the roots of the difficulty in developments arising out of the World War. It seeks rather to prove that practically all of the adverse conditions affecting agriculture began at a much earlier period. This is so radical a departure from the usual analysis that it may be worth while to list the arguments in some detail.

First is discussed what is termed the weakening of the competitive position of American agriculture in the home and foreign markets. The

declining relative exports of agricultural commodities and the rising imports are cited as proof of this. Many will question whether these are sufficient grounds on which to postulate the decline of American agriculture, particularly during those periods in which the prices of agricultural products in this country were rising at a substantially more rapid rate than those of general commodities. It is true, of course, that with the tremendously more rapid development of industry and trade as compared with agriculture in this country during the last thirty years, the magnitude of our agricultural surplus has greatly declined. Also, we depend to a larger extent than formerly for a considerable range of agricultural products produced in this country, if at all, in quantities too small to supply our growing demand. This, however, is not adequate evidence of a decline in the economic status of the agricultural industry.

The next proposition is that domestic costs of agricultural production have risen more rapidly ever since 1900 than the price of agricultural products. Dividing agricultural costs into capital costs, labor costs and material costs, the writers seek to show that, with the exception of labor costs, an index comparison, based on conditions in 1879 to 1883 as 100 per cent, shows more rapid advances up to the period 1919 to 1923 than do prices. The calculations in the case of these cost elements seem to be based on inadequate data and are not altogether convincing.

They next take up the matter of the share in the National dividend going to the agricultural population, and conclude that, both absolutely and on a per capita basis, the agricultural share has declined. They present two tables in substantiation of this claim; one carrying the analysis back to 1850, the other to 1909. They show that, using the share going to people engaged in other industries as 100 per cent, the index showing the share going to the agricultural class on a per capita basis was 31 in 1850, rose to 46 in 1900 and dropped back in 1920 to 39. Taking the years 1909 to 1921, the index was 56 in 1909, rose to 98 in 1918 and dropped back to 43 in 1921. It should be pointed out in this connection that these prorated returns include not only personal earnings but earnings of property. It is obvious that the income from property in non-agricultural industries rose at a considerably more rapid rate during both the longer and the shorter period than was true in agriculture. This fact itself goes a long way toward explaining the apparent loss of ground in the income of the agricultural classes.

Again they present data to show that both wealth and income have increased at a much slower rate in the agricultural industry than in other industries. This, of course, is true. Our agricultual industries reached a maximum rate of development about the close of the 19th Century. No such point was reached in non-agricultural industries and is probably still far from being reached. Such a condition is unavoidable in the development of any country from one primarily agricultural to one predominantly industrial, as the United States is today.

The authors then take up the analysis of the return to capital and labor in agriculture and find that it has declined relatively to that in

other industries. They show, for example, that in 1909, the average earning of workers in other occupations was $598, while the average return per farmer for labor and management was only $376. In 1919 the return per industrial worker was $1,285, and the corresponding return for the farmer's labor and management was $1,490. This dropped, however, in 1920 to $508 for the farmer while it rose for the industrial laborer to $1,503.

As a final evidence of the relative decline of agriculture they point to the rising rate of business failures in agriculture as compared with those in industry. However, the percentage of failures, as indicated by available bankruptcy data, has always been lower in agriculture than in industry and trade, yet the rate of increase from 1910 to 1915 was evidently greater in agriculture. This continued up to 1916 when there was a recession. Following 1919, however, there was a tremendous increase in agricultural failures, while those in non-agricultural fields slightly declined.

The authors conclude from all of these indications that the recent depression in agriculture is not altogether due to adverse conditions arising immediately out of the results of the war. They read from their data what seems to them unmistakable evidence that American agriculture really reached a turning point about the year 1900, and that since that time the difficulties which became obvious in the recent depression were developing and beginning to have their effect. This hypothesis will hardly meet with general acceptance particularly in view of the fact, already cited, that agricultural prices not only were rising at a rather rapid rate but were making consistent gains on the prices of other commodities. It is true that such prosperity as this condition engendered led inevitably to a too rapid capitalization of agricultural resources, thus tending to increase the apparent costs of production more rapidly than prices were increasing. However, this general development had the net effect of placing agriculture in a relatively stronger position than it would have been had not these particular price relations existed.

Space does not permit an equally detailed review of the contents of Chapter 3, in which the factors of agricultural income are discussed, nor of Chapter 4 which treats of the factors of agricultural costs.

The reviewer, in taking issue with certain of the propositions in this work, does not wish to be understood as minimizing its value. It presents in a telling way a large number of considerations back of the present agricultural situation and should prove very interesting and stimulating reading to everyone interested in the agricultural problem. Its purpose is frankly to raise the questions which must be met before an intelligent agricultural policy for the country as a whole can be formulated.

C. L. Holmes.

Iowa State College.

Taylor, Carl C. *Rural Sociology.* A study of rural problems, pp. 509. Harpers, 1926.

Rural Sociology, like other sciences in the making, has been growing up about pressing problems in its field. Starting twenty years ago with a study of these problems from an ameliorative point of view it has progressed through and beyond mere problem considerations to the more fundamental aspects of rural social structure and processes out of which social problems grow, a development which is bringing Rural Sociology into a closer relationship with General Sociology. The book under review shows evidences of this tendency. The writer states it as his purpose to "bring together a consideration of outstanding specific problems of rural life and the general principles of the science of sociology," and has well achieved his aim considering the fact that the book is a treatment of problems. This relation to General Sociology is most in evidence in Parts One and Three where rural backgrounds and rural social relationships are discussed.

Part Two deals with problems. The old familiar ones of family, health, education, religion, recreation and isolation are present as well as art and standard of living which are newcomers in college texts, though not in the literature. Economic factors receive considerable attention, as of course they should, particularly in the chapters on "Farm Labor" and "Land and Society," but they are always treated from the sociological point of view, i. e., the relation of these factors to the welfare of the people. Professor Taylor has performed a distinct service in bringing up to date the treatment of these rural social problems. Also by relating them somewhat to the general field he has taken us one step nearer to a Rural Sociology which it is to be hoped is not too far off.

The reviewer notes a few loose and inaccurate statements of which only one may be noted here. Because a higher percentage of rural men and women than urban are married it is inferred that the excess of females in cities has upset the normal balance of social life there more than the excess of males in the open country (p. 40). Without raising the question as to which is the more "normal" in this respect, the fact is that the balance of the sexes in our cities as a whole is very nearly equal, though there is a marked excess of males in the open country and of females in the villages.

C. E. Lively.

Ohio State University.

RECENT STATE BULLETINS

Compiled by Mary F. Carpenter, Library, Bureau of Agricultural Economics, U. S. Department of Agriculture

ARKANSAS. Brannen, C. O. and Dickey, J. A. Returns from the Arkansas radish crop in 1926. (Ark. Agr. Exp. Sta. Bul. 214. 1926.)

Arkansas Agricultural experiment station. 38th annual report. (Bul. 215, 1926.) Gives an account of the progress of research work in farm incomes and the standard of living, farm credit, farm taxation, cost of producing and marketing small fruits and vegetables, factors of practical farming and the survey of the peach industry.

CALIFORNIA. Bisson, C. S., Jones, H. A., and Robins, W. W. Factors influencing the quality of fresh asparagus after it is harvested. (Calif. Agr. Exp. Sta. Bul. 410, 1926.)

DELAWARE. Delaware. Agricultural experiment station. Annual report of the director * * * June 30, 1926. (Bul. 147, 1926.)

Has an article on the marketing of Delaware eggs, by C. L. Benner.

Bausman, R. O. Farming for profit in the Middletown area. (Univ. of Del. Ext. Serv. Bul. 12, 1926.)

A good account of general farming in Delaware in 1924, with some comparable figures for 1914.

KANSAS. Englund, Eric. Federal aid as a part of a long-time agricultural policy with special reference to the distribution of tax levies. (Kans. Agr. Exp. Sta. Bul. 237, 1926.)

MISSISSIPPI. Long, L. E. A comparison on the basis of net income of twenty profitable and twenty unprofitable farms of Lincoln County. (Miss. Agr. Exp. Sta. Circ. 67, 1926.)

Long, L. E., and Reynolds, H. W. Progress report on cost of production route in Choctaw County, Miss. 1925. (Miss. Agri. Exp. Sta. Bul. 237, 1926.)

NEW YORK. Corbett, R. B. An economic study concerning the operations of fruit and vegetable shippers in western New York. (Cornell Agr. Exp. Sta. Bul. 453, 1926.)

Gillett, R. L. Statistics relative to the dairy industry in New York State, 1925. (State Dept. of Markets, Agri. Bul. 192, Albany, July, 1926.)

A particularly comprehensive statistical picture of New York's most important single phase of the agricultural industry, the result of co-operative effort of State and Federal agencies, with individuals, firms, and associations.

NORTH DAKOTA. Marvin, F. A. Co-operative marketing of wheat. (N. Dak. Univ. Ext. Div. Bul. 46, 1926.) (Educational pamphlet, Series No. 2.)

Thorfinnson, T. S. Farm business analysis using scorecard method. (N. Dak. Agr. Col. Ext. Circ. 71, 1926.)

OHIO. Ohio Agricultural experiment station. Bi-monthly bulletin, Vol. 11, No. 6, Nov.-Dec., 1926.

Partial contents:

Falconer, J. I. Farm machinery costs in Ohio. p. 245.

Falconer, J. I. Summary of 4,666 farm records in Ohio from 1910-1925. p. 246-250.

Falconer, J. I. Feed prices. p. 251.

Falconer, J. I. Index number of production, wages and prices. p. 254.

McBride, C. G. Freight rates on Ohio butter, cheese and condensed milk. p. 252-253.

OKLAHOMA. Knapp, Bradford. Safe farming for 1927 * * * Sound reasons for a sound business policy in acreage reduction. (Okla. Agr. and Mech. Col. Ext. Div. Circ., 232.)

SOUTH CAROLINA. Jensen, W. C. Farming for profits. Anderson and similar areas of South Carolina. (S. C. Agr. Exp. Sta. Bul. 230, 1926.)

Russell, B. A. A study of economic conditions in the Lexington-Batesburg section of South Carolina. (S. C. Agr. Exp. Sta. Bul. 233, 1926.)

TEXAS. Fraps, G. S. and Asbury, S. E. Commercial fertilizers in 1925-26 and their uses. (Tex. Agr. Exp. Sta. Bul. 346, 1926.)

UTAH. Utah. Agricultural experiment station. Report of the director * * * January 1, 1925 to June 30, 1926. (Bul. 198, 1926.)

Gives a list of projects, among them being some cost of production studies.

WASHINGTON. Spillman, W. J. Farming in the Big Bend country. (Wash. Agr. Exp. Sta. Popular Bul. 135, 1926.)

Taylor, E. A., and Yoder, F. R. Rural social organization in Whitman County. (Wash. Agr. Exp. Sta. Bul. 203, 1926.)

WISCONSIN. McNall, P. E. and Hartman, W. A. Cost of filling silos. (Wis. Agr. Exp. Sta. Bul. 386, 1926.)

NEWS NOTES

Recent reassignments in the Bureau of Agricultural Economics, Washington, D. C., include:

Lloyd S. Tenney to be Chief of Bureau.

C. W. Kitchen to be Assistant Chief.

F. J. Hughes to be Business Manager.

H. F. Fitts will assemble Federal and State legislation relating to marketing in its various aspects, and will arrange to keep the data complete.

Dr. W. J. Spillman has been granted leave of absence from the Division of Farm Management and Costs for the year 1927 that he may study the present status of agriculture among the American Indians, as one of a Commission working under the auspices of the Institute for Government Research.

Clement E. Trout, formerly editor of State and Federal Marketing Activities, Bureau of Agricultural Economics, is now director of publicity at the University of Oklahoma, Stillwater.